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Approved For Release 2003/10/22 : CIA-RDP85T00875R000300010025-7

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# FOREIGN PRESS DIGEST

*Soviet Scientists and Scientific Organizations (135)*

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30 April 1974  
FPD 0029/74

NOTE

This monthly publication contains information on the theoretical, technical, and applied aspects of cybernetics as defined in the USSR. The information is taken from the world press, particularly the scientific periodicals, books, and newspapers of the Soviet Union.

Items in this publication are either abstracts, excerpts, or full or summary translations, and are identified as such.

Information on the technical and hardware aspects of cybernetics in the USSR may be found in the JPRS series *USSR Scientific Abstracts: Cybernetics, Computers and Automation Technology*, or as translations in separate reports, under appropriate titles.

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RFD:SOVIET SCIENCE

I. ACADEMIES OF SCIENCES

USSR

1. USSR

"Scientists -- Five Year Plan"

Moscow, Pravda, 6 Mar 74, p 2

Translation: The session of the General Meeting of the USSR Academy of Sciences opened yesterday in Moscow in the House of Scientists. The first day of its work was devoted to summing up the Academy's activities for the third year of the Five-Year Plan. The Meeting was opened with introductory remarks by President of the Academy of Sciences USSR Academician M. V. Keldysh.

"The Academy of Sciences USSR, in connection with its 250th anniversary, has received a governmental award -- the Order of Lenin. We consider this as recognition of the service not only of the Academy, but also of all Soviet science," stated M. V. Keldysh. In the name of the General Meeting, the scientists and all associates of the Academy, he warmly thanked the Communist Party and the Soviet Government for their high appreciation of its activities and affirmed that the scientists will apply all their knowledge, force, and capabilities toward fulfilling the responsible tasks placed before Soviet science.

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Pravda, 6 Mar 74, p 2

M. V. Keldysh characterized the significant successes in fulfilling the decisions of the 24th CPSU Congress for developing the national economy, realizing the extra-political course of the Communist Party and the Soviet Government directed toward moderating the international situation and toward strengthening peace. Improvement in the world situation, he emphasized, opened new possibilities for international cooperation in science and technology.

Further development work has been done on studying space jointly with the socialist countries, France, the USA, India, Sweden, and other states. Research on the "Intercosmos" program has continued. The Soviet-Polish "Intercosmos -- Copernicus-500" satellite has been launched. The "Intercosmos-10" satellite has been placed in orbit for complex geophysical research.

As a result of analyzing data from the Soviet-French "Oreol" satellite, new characteristics have been established for the eruption of solar winds in earth's magnetosphere. The "Oreol-2" satellite was launched last December in order to continue these investigations. Soviet and French scientists have made laser measurements of the distance between the earth and moon which are correct within 40 centimeters. Joint Soviet-American experiments in the physics of elementary

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particles, begun by Soviet scientists in Dubna and Serpukhov, are underway at the now-largest accelerator in Batavia (USA). During research on the interaction of protons with protons at energies of 8-400 bev, it was shown that the radius of the action of nuclear forces between protons increases with energy.

For Academy institutions the past year was marked by important scientific results. M. V. Keldysh dwelt upon a number of these.

In February 1974 the "Mars-4" and "Mars-5" stations reached the neighborhood of Mars. Due to a breakdown in the work of one of the "Mars-4" station's on-board systems, the braking engine did not operate and the station passed the planet at a distance of 2,200 kilometers. Nonetheless "Mars-4" sent back good photographs of the planet. The "Mars-5" station on 12 February went into orbit as an artificial satellite of Mars and began investigating circumplanetary space and the planet's surface and atmosphere. In a few days "Mars-6" and "Mars-7" will reach the vicinity of Mars. During the flights radiation and magnetic measurements were taken, the sun's radio waves were investigated, and solar plasma flow was registered. The neutral component of the interplanetary environment was studied in cooperation with French scientists.

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Pravda, 6 Mar 74, p 2

With the aid of the self-propelled "Lunokhod-2" a wide range of lunar studies was completed. The geological and morphological characteristics of the topography along its path were studied; in particular, the characteristics of the structure of the tectonic fracture of the moon's surface was clarified. Detailed study by the Institute of Geochemistry and Analytical Chemistry of lunar soil delivered by the "Luna-16" and "Luna-20" stations showed a number of rare mineral phases and variations between minerals of lunar rock of marine and continental types.

The flights of the manned spacecraft "Soyuz" continued. During the flights of "Soyuz-12" and "Soyuz-13" the ship control systems were perfected and on-board systems tested; the cosmonauts completed astrophysical observations and other research. Using the space observatory "Orion-2" installed in "Soyuz-13," they obtained spectrograms of a large number of stars in the ultraviolet band.

With the aid of the satellite series "Cosmos," the Physics Institute of the Academy of Sciences and other institutes conducted experiments for determining the so-called red shift in radio waves in the earth's gravitational field. Registration of the shift in radio frequency agrees with the values which have been predicted by the general theory of relativity.

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TOP SECRET//SOVIET SCIENCE

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Significant results have been achieved in a number of areas of theoretical mathematics and its applications.

Work on control theory has been developed. Peripheral equipment for controlling industrial objects in metallurgy and other fields has been developed on the basis of an established theory of control systems with variable structure.

The physics of elementary high energy particles has been enriched by new and significant knowledge on the characteristics of elementary particles and their interaction. A group of associates of the Joint Institute of Nuclear Research and the Institute of High Energy Physics have recorded the nucleus of antiprotonium on the Serpukhov accelerator. The complexity of the experiment is attested to by the fact that the four antiprotonium nuclei were found among 400 billion other particles which passed through the unit. In the Institute of Nuclear Physics of the Siberian Department an electron positron accumulator was used to develop a powerful beam of synchrotron radiation with maximum intensity in the region of two angstroms and a record radiation intensity was reached.

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USSR

Pravda, 6 Mar 74, p 2

Work in electronics, optics, and quantum electronics has been developed. The Physics Institute and the Institute of Applied Mathematics have confirmed the concept concerning the possibility of the powerful compression of matter by laser emission and have obtained a high energy yield in the process.

There are achievements in the application of quantum electronics in other fields as well. The Physics Institute and an institute of the electronics industry have created a model of a projection television device based on a cathode ray tube with a semiconductor screen which generates laser emissions. This device reproduces a television program on a square screen of up to two square meters in red and green light. Based on a similar tube the model of a device which permits rapid recording and readout of information files as a hologram in optical memory devices has been developed. A laser projection microscope for developing images of micro objects on a large screen has been developed. This opens up wide possibilities in optics.

The Institute of Atomic Energy imeni I. V. Kurchatov with participation of the Physics Institute has built a multiple-unit magnetic system, creating a stationary magnetic field with a high field strength of nearly 250 kilo-oersted in a working volume up to 30 millimeters in diameter. A new method of determining the impurities in semiconductors with a sensitivity many orders above those earlier existing has been developed.

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USSR

Pravda, 6 Mar 74, p 2

New materials have been developed for technology. In particular, corrosion-free, ceramic-oxide electrical conducting materials capable of operating at a temperature of up to 2000°C have been suggested by the Physics Institute. They can find wide application in a number of high-temperature processes. For example, with their use, the High-Temperature Institute has been able to assure the continuous operation of the U-25 MHD generator for a period of 5½ hours instead of 30 minutes attained with metallic conductors. In the Institute of Chemical Physics the scientific basis has been laid for a promising new technological process for obtaining superhard and heat-resistant materials in a flame front. This makes it possible to make up for the short supply of tungsten in the production of hard alloys.

Successes have been achieved in the synthesis of heat resistant polymers. The Institute of Organoelemental Compounds has synthesized silicon organic polymers of a new type which possess a complex of valuable technical properties; in particular, combining high heat resistance with good adhesion. It has been proven possible to attain polymer substances which possess a high heat stability up to 400-600 degrees with preservation of mechanical properties.

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Pravda, 6 Mar 74, p 2

M. V. Keldysh, with satisfaction, related a number of achievements in the catalysis field. The Institute of Organic Chemistry has developed new and highly effective zeolite catalytic agents for the production of ethylbenzene -- an important raw material for rubber, resin, and plastics. In the Institute of Chemical Physics a number of new catalytic processes for getting valuable organic substances -- aromatic amines -- from nitro compounds has been proposed. This provides the possibility of converting industrial production of many products (including herbicides, dyes, and synthetic rubber fillers) to newly progressive and highly effective technology; this process goes on at atmospheric pressure and a temperature of 20-50 degrees.

In speaking of studying protein systems, M. V. Keldysh indicated that in the Institute of Bioorganic Chemistry imoni M. M. Shemyakin a new protein for the first time has been isolated from liver cells and characterized which is responsible for intercell interaction. The primary structure of two proteins -- neurotoxins -- has been determined here together with the Institute of Biochemistry of the Uzbek Academy of Sciences.

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USSR

Pravda, 6 Mar 74, p 2

Definite progress in the synthetic chemistry of nucleic acids has been marked. The Institute of Bioorganic Chemistry and the Novosibirsk Institute of Organic Chemistry together have synthesized a number of nucleotides which have fragments of the gene coding valine transport RNA. The primary structure of two transport RNA's has been decoded in the Institute of Molecular Biology.

Among the attainments of science about the Earth M. V. Keldysh notes the accomplishment of the Institute of the Physics of the Earth -- the first time in history -- a vertical electrical probe of the earth's core to a depth of 30-40 km by a powerful pulse from an MHD generator. This opens up the possibility of studying the make-up of the earth to the boundary between the earth's core and the upper mantle, to study the mechanism of strong earthquakes, and to predict the existence of deeply-lying solid minerals.

The research expedition of the Institute of Oceanology to the Baltic Sea brought back data which indicates the presence of accumulated petroleum hydrocarbons in the bottom bedrock. This speaks of promise in searching for oil and gas deposits in the Baltic Sea.

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Pravda, 6 Mar 74, p 2

The social sciences have finished a number of studies on actual problems of the present day. The development of the social and economic problem of scientific-technical progress and questions of the growth of USSR economic ties with socialist, developed capitalistic, and developing countries should be noted here. There is considerable interest in studies on basic philosophical problems of modern natural science which are reflected in the series of books "Dialectic Materialism and Modern Natural Science." Historians have prepared a number of large-scale works on the problems of the world historical process and our Homeland's past.

In 1973 the Academy of Sciences gave much attention to perspectives of planning. A complex program of technical progress and its social consequences for 1976-1990 has been prepared together with the State Committee for Science and Technology.

Ties with production continued to strengthen. More than 600 studies for cooperation with the industrial plan have been completed by institutes of the USSR Academy of Sciences. A number of works having important national economic significance have been transmitted for realization by the ministries.

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USSR

Pravda, 6 Mar 74, p 2

In conclusion M. V. Keldysh stated: "In its salute to the Party and to the Soviet people, the CPSU Central Committee expressed confidence that the Soviet intelligentsia, with even more vigor, will continue to develop science, technology, and culture. In its answer to the Party's call, the Academy of Sciences this year will achieve even more significant scientific results, introduce new contributions to the building of communism."

Questions of scientific-organizational activities of the Presidium of the Academy of Sciences USSR in 1973 were discussed in the report of G. K. Skryabin, acting chief scientific secretary of the Presidium and Corresponding Member of the USSR Academy of Sciences. He emphasized that the center of attention of all Academy divisions was occupied by important scientific and national economic problems, questions of perspectives of planning and scientific forecasting, and protection and improvement of the natural environment.

Academics A. A. Bayev, G. M. Frank, V. A. Ambartsumyan, N. P. Fedorenko, N. G. Bruyevich, N. V. Mel'nikov, B. N. Petrov, V. M. Tuchkevich, and Corresponding Members N. P. Bokhterev, V. A. Vinogradov, V. P. Dzhelepov, and V. A. Kovda appeared at the Meeting.

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Academician Yu. A. Ovchinnikov was elected vice-president of the USSR Academy of Sciences.

The session continues its work.

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TOP SECRET SOVIET SCIENCE

2. USSR

"Science of the Multinational Socialist State"

Kiev, News from Ukraine, No. 12, Mar 74, p 2

Large-scale and fruitful work on the organization of research centers began in various parts of the USSR in the years of the first five-year plans. Initially, this work was conducted by scientific expeditions which were gradually turning into standing scientific stations. As these research stations were growing, they were gradually being transformed into the branches of the USSR Academy of Sciences. Uniting local scientific establishments, they played an important part in the economic and scientific progress of union republics and the training of local personnel. Of tremendous importance for the strengthening of the multinational Soviet state were the activities, organized by these branches, for the study of the history and culture of various nations and nationalities of the USSR and the development of written languages for the peoples who did not have them before the October Revolution. All this, the authors emphasized, created prerequisites for the further intensive growth of Soviet science. The branches of the USSR Academy of Sciences were subsequently transformed into the Republic Academies of Sciences.

At present the Republic Academies of Sciences are making a very effective contribution to the solution of tasks connected with communist construction. The

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News from Ukraine, No. 12, Mar 74, p 2

tempestuous scientific progress of union republics has promoted the rapprochement of the nations and nationalities of our country, as well as their cooperation and fraternal mutual assistance. The evening out of the scientific potentials of the nations and nationalities of the USSR also meant a big step toward the abolition of the unjust division of labor among nations. This unjust division of labor was inherited from the exploiter society where physical work was the only occupation of a number of colonial and semicolonial nations and nationalities. The all-round character of the development of science is typical of national republics.

The emergence of a ramified network of the Republic Academies of Sciences, branches of the USSR Academy of Sciences and scientific centers has enabled the Party and the Government to adopt the policy of intensifying the division of labor in science within the framework of individual areas of the country as well as among fraternal republics. The fruitfulness of this policy can be illustrated on the example of any union republic. Of course, these examples do not characterize in detail the diversified activities of the Republic Academies. Such examples only illustrate the effectiveness of concentrating efforts on tackling important macroeconomic problems. For instance, the Academy of Sciences of Kirgizia concerns itself primarily with the technical problems of mining and carries out relevant research projects at enterprises of different industries.

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Problems connected with the perfection of oil processing and the development of the up-to-date petrochemical industry hold the central place in the research program of Azerbaiydzhan scientists.

In Turkmenistan, a special place in research programs belongs to livestock selection, to the evolution of high-yielding fodder crops and, of course, to desert development. The last circumstance is only too natural, since a considerable part of Turkmenistan's territory is the desert which has very little fresh water.

Tadzhikistan receives stable and high cotton harvests first of all because republican scientists and practical workers successfully engage in crop selection and pest combatting.

The all-round development of the Polissya Lowland, occupying an area of 13,000,000 hectares, is among the most important problems which are being solved by Belorussian scientists. The essence of the Polissya problem can be summed up as follows: to change the regimen of surface and subterranean waters and effect other land melioration schemes in order to radically transform the natural conditions of this territory with the aim of the further development of its productive forces.

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USSR

News from Ukraine, No. 12, Mar 74, p 2

The increased attention of Lithuanian scientists to land melioration and the reconstruction of the drainage system has brought about important results: the per-hectare yields of all crops have grown.

The main direction of research, with due regard to the local specificities, makes it possible to receive results of national and world importance in various fields, basic research included. The concentration of efforts on the elaboration of the theoretical principles of electrical welding has turned the Institute of Electric Welding imeni Ye. Paton of the Academy of Sciences Ukrainian SSR into the center -- the biggest of its kind in the USSR and the world in general -- of research connected with materials welding and new methods of producing high-quality and extra-pure metals and alloys. The method of electrical-slag welding, which was worked out in the Institute and which makes it possible to weld metals of practically any thickness, is, as Boris Paton, president of the Academy of Sciences Ukrainian SSR, stressed, "an outstanding achievement which radically changed technological processes in the field of heavy machine-building." The concentration of scientific potentialities has enabled Uzbek scientists to take a leading place in the USSR in the field of opto-electronics, nuclear spectroscopy and activation analysis. Extensive work is conducted on the application of solar energy in the national economy, the theory of

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USSR

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the movement of multi-phase media in pipelines etc. The metallogenetic school of Academician K. Satpayev, is known far beyond Kazakhstan. His school has made a tremendous contribution to the development of the geological sciences and the establishment of the fundamental laws governing the distribution of minerals.

Research projects of Georgian mathematicians, physicists, biophysicists and other scientists, were known all over the world. Moldavian scientists are engaged, among other things, in designing cybernetically-controlled power transmission lines, which have a much greater carrying capacity than existing ones. The results of the study by Latvian scientists of the processes of the transfer of energy and matter in the presence of the electromagnetic impact are known in our country and abroad. This permits to speak of the Latvian school of heat physiцists. The importance of the work of Tartu University scientists in the field of aerosols and the ionization of the atmosphere, goes far beyond the confines of Estonia.

Projects carried out by Armenian astrophysicists have met with world recognition. Prominent scientists from many countries publish their articles in the journal Astrofizika which appears in Armenia.

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News from Ukraine, No. 12, Mar 74, p 2

Soviet science has made a great leap forward and now holds the leading place in a number of key sectors of research. Exerting ever growing influence on industry and agriculture, on the entire life of Soviet society, it is a powerful factor of social progress.

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PPD:SOVIET SCIENCE

Republics

3. USSR

"Kirgiz Academy of Sciences"

Frunze, Sovetskaya Kirgiziya, 27 Feb 74, p 2

Translation: The Kirgiz Academy of Sciences, in accordance with Rules No. 15, 16, and 17 of its Decree, reports the names of candidates for active member (academician) and corresponding member of the Kirgiz Academy of Sciences nominated, on the basis of announcements in "Sovetskaya Kirgiziya" and Sovetskik Kyrgyzstan," dated 27 January 1974, by scientific establishments, social organizations, scientific workers, and groups of scientific workers.

CANDIDATES FOR ACTIVE MEMBER (ACADEMICIAN)

Division of Physicotechnical and  
Mathematical Sciences

Specialty of Mechanics and Mine Machine-Building: Oleg Dmitriyevich Alimov,  
Corresponding Member of the Kirgiz Academy of Sciences

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Sovetskaya Kirgiziya, 27 Feb 74, p 2

Division of Chemicotechnological  
and Biological Sciences

Specialty of Clinical Physiology: Mirsaid Mirkhamidovich Mirrakhimov,  
Corresponding Member of the Kirgiz Academy of Sciences

Specialty of Animal Biochemistry: Vladimir Georgiyevich Yakovlev, Corresponding  
Member of the Kirgiz Academy of Sciences and Honored Scientist Kirgiz SSR

Division of Social Sciences

Specialty of Kirgiz Literature: Chingiz Torkulovich Aytmatov, Lenin and State  
Prize USSR laureate and National Writer Kirgiz SSR

CANDIDATES FOR CORRESPONDING MEMBER

Division of Physicotechnical and  
Mathematical Sciences

Specialty of Heat Energy: Akmatbek Saginovich Dzhamanbayev, Doctor of Technical  
Sciences and professor

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USSR

Sovetskaya Kirgiziya, 27 Feb 74, p 2

Division of Chemicotechnological  
and Biological Sciences

Specialty of Pharmacology: Arstanbek Alybayovich Altymyshev, Doctor of Medical Sciences and State Prize Kirgiz SSR laureate

Specialty of Inorganic Chemistry: Kekin Sulaymankulov, Doctor of Chemical Sciences and professor; Mamyt Usubakunov, Candidate of Chemical Sciences

Division of Social Sciences

Specialty of Kirgiz History: Salmorbek Tabayshaliyev, Doctor of Historical Sciences, professor, State Prize Kirgiz SSR laureate

Specialty of CPSU History: Kerimkul Kenzheevich Orozaliyev, Candidate of Historical Sciences, State Prize Kirgiz SSR laureate

Specialty of Dialectic and Historical Materialism: Asanbek Tabaldiyev, Doctor of Philosophical Sciences and professor

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Sovetskaya Kirgiziya, 27 Feb 74, p 2

Specialty of Kirgiz Language: Byubiyna Omurzakovna Oruzbayeva, Doctor of Philological Sciences and professor

Signed by the Presidium of the Kirgiz Academy of Sciences

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U. USSR

REUT, V. and MEDONOV, R., special correspondents of "Pravda"

"Cooperation Between Lithuanian and Belorussian Scientists"

Moscow, Pravda, 27 Feb 74, p 2

Translations: The distance between Vil'nyus and Minsk is a little more than 200 kilometers. The majestic Nemunas-Neman is glorified with equal inspiration by the poets of both Lithuania and Belorussia. The natural conditions of the two fraternal republics are similar in many respects. The socialist emulation agreement concluded between the Lithuanian and Belorussian SSR is a natural outgrowth of their unity and friendship. Within the framework of this agreement the cooperation between scientists is also developing.

The academies of sciences of both republics have produced many elaborations which found wide practical application. The new, promising technological processes of applying to metals the corrosion-resistant galvanic coatings, proposed by the Institute of Chemistry and Chemical Technology of the Lithuanian Academy of Sciences, are readily used in many enterprises of our country. Lithuanian scientists have pledged themselves to assist the enterprises of Belorussia in the introduction of these new methods. The Institute of Physics and Mathematics of the Lithuanian

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USSR

REUT, V., et al., Pravda, 27 Feb 74, p 2

Academy of Sciences will help to introduce the automatic control system in the organizations of the Belorussian SSR and will turn over programs of network planning and control for BESM-4. Some other directions of cooperation with production organizations have been also considered.

The high-energy electrons, so-called hot electrons, are being intensively investigated at the Institute of Semiconductor Physics of the Lithuanian Academy of Sciences under the leadership of Academician of the Lithuanian Academy of Sciences Yu. K. Pozhela. The sector of hot electrons is headed by Candidate of Physico-mathematical Sciences Vintsentas Ionovich Diyenis. Here, the study is made of the processes taking place in semiconductor crystals which are placed in an electric field capable of heating free electrons substantially. The practical result of this work is the creation of semiconductor pickups of high-frequency field signal. And it has become necessary to investigate the influence of radiation defects on these instruments. But where and how?

The Belorussian scientists have at their disposal a reactor, accelerator of elementary particles, sources of gamma-irradiation. At present, all this arsenal, as a result of the agreement on creative cooperation, is at the disposal of Vil'nyus scientists as well.

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REUT, V., et al., Pravda, 27 Feb 74, p 2

"The plan of our work," says V. I. Diyenis, "will be as follows: we manufacture the elements and then, at Minsk, they are irradiated; the effects of irradiation are studied by our workers, and then we will discuss the results together with our Belorussian colleagues. Such a joint discussion is of especial importance to us since Belorussian scientists were able to accumulate considerable experience in investigating the action of radiation on semi-conductors."

The importance of cooperation with the Vil'nyus scientists is also highly valued by the director of the Laboratory of Radiation Effects of the Institute of Solid-State and Semiconductor Physics of the Belorussian Academy of Sciences, Doctor of Technical Sciences Fedor Pavlovich Korshunov.

"For us, physicists," says he, "both from theoretical and practical viewpoint, is very important to know how radiations affect the elements that are created by Lithuanian scientists. In some cases they might worsen their qualities, whereas in some others they improve them. As a result of experiments we are able to form a more definite opinion about the structure of the so-called radiation defects. In a number of cases it becomes also possible to utilize irradiation for the development of new or the improvement of existing technological methods of the instrument making.

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USSR

REUT, V., et al., Pravda, 27 Feb 74, p 2

The Institute of Solid-State and Semiconductor Physics of Belorussian Academy of Sciences is carrying out systematic studies on physical properties of solid solutions of the compounds belonging to the 3rd and 5th group of the periodic system. The effect of the high pressure on the properties of these semiconductor compounds is also studied. The initiator and scientific leader of this work is Academician of the Belorussian Academy of Sciences N. N. Sirota.

Within the framework of cooperation with Belorussian scientists, a group of scientists of the Institute of Semiconductor Physics of the Lithuanian Academy of Sciences headed by Candidate of Physicomathematical Sciences Arvidas Yuozovich Matulenis, is studying electrical properties of heterojunctions in solid solutions. These investigations are also of practical importance. A very fine film of the solid solution of arsenides of aluminum and gallium, prepared in a special way, contains a varilength transition, a peculiar "electronic membrane," which under pressure shifts in the crystal almost inertialessly. Such a film with a "membrane" acts as a very sensitive pressure pickup. A change in the load by 10% leads to a 30% jump in the value of electric resistance of the film.

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USSR

REUT, V., et al., Pravda, 27 Feb 74, p 2

With cooperation of their Leningrad colleagues, scientists from the Physico-technical Institute imeni A. F. Ioffe of the USSR Academy of Sciences, the Vil'nyus scientists have created a technological base for the manufacture of solid-solution films. For testing the pickups, Lithuanian scientists were using a laboratory unit creating pressures up to 10,000 atmospheres. And at present, Belorussian scientists are offering to their Vil'nyus colleagues their own, considerably more powerful unit. However, the usefulness of cooperation consists, in the opinion of Lithuanian scientists, not only in that one can use a more perfect equipment of one's neighbors, but also in the wide use of the experience of one's colleagues in constant consultations and a discussion in common of the results of investigations.

The socialist emulation breeds also the exactingness toward oneself. How does it enhance the creative effectiveness of scientists and positive results of research? In answering this question, Vintsentas Ionovich Diyenis, who acts at present as deputy director for scientific work of the Institute of Semiconductor Physics of the Lithuanian Academy of Sciences, resorts to a humorous comparison:

"Somebody said that company needs women in order to smarten men. In our constant creative contacts with our Minsk colleagues we exert toward each other this

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USSR

REUT, V., et al., Pravda, 27 Feb 74, p 2

invigorating effect: a comradely but at the same time fault-finding attitude of colleagues constantly compels us to exact from oneself ever more and more -- in knowledge, in creative persistence, and in mastering the modern methods of investigation. This mutual exactingness yields results."

"The socialist emulation of our Institutes is of mutual benefit," agrees Deputy Director for Science of the Institute of Solid-State and Semiconductor Physics of the Belorussian Academy of Sciences Nikolay Alekseyevich Strukov. Many of our theoretical elaborations can be now more rapidly verified and developed thanks to creative cooperation with our Lithuanian colleagues. At the same time, some of our works of practical importance, for example, in the domain of new materials, are also not without interest for the scientists and manufacturers of Lithuania.

The emulation of the academies of sciences of the two Union republics encompasses increasingly greater number of their organizations and becomes more specific. Agreements were concluded between the Institutes of General and Inorganic Chemistry of the Belorussian Academy of Sciences and of Chemistry and Chemical Technology of the Lithuanian Academy of Sciences, of Mathematics of the Belorussian Academy of Sciences

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FPI:SOVIET SCIENCE

USSR

REUT, V., et al., Pravda, 27 Feb 74, p 2

and of Physics and Mathematics of the Lithuanian Academy of Sciences, of Experimental Botany of the Belorussian Academy of Sciences and of Botany of the Lithuanian Academy of Sciences, and between other related scientific institutions. The creative cooperation and mutual assistance will undoubtedly contribute to a further enhancement of theoretical level of scientific research and practical realization of specific elaborations in the production.

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MPD:SOVIET SCIENCE

II. MEDICINE AND HEALTH

USSR

5. USSR

"Session of the USSR Academy of Medical Sciences Ends"

Moscow, Izvestiya, 2 Mar 74, p 5

Translation: On 28 February 1974, the 35th Session of the General Assembly of the USSR Academy of Medical Sciences held in Moscow ended.

Among other things the General Assembly has chosen new members of the USSR Academy of Medical Sciences, including 15 academicians and 31 corresponding members. Elected to active membership of the Academy were P. N. Burgasov, K. V. Bulin, I. I. Ivanov, A. P. Kolesov, P. N. Kosyakov, S. P. Karpov, V. V. Kupriyanov, N. A. Lopatkin, B. A. Lapin, L. T. Malaya, N. I. Nisovich, A. P. Romodanov, V. S. Savelyev, K. V. Chachava, and P. N. Yurnev.

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Izvestiya, 2 Mar 74, p 5

Chosen to be foreign members of the USSR Academy of Medical Sciences were a Bulgarian scientist, Rector of the Medical Academy of the People's Republic of Bulgaria Atanas Khristov Maleyev; Director of the Central Institute of Research in Cardiovascular Regulation of the German Democratic Republic Academy of Sciences Rudolf Baumann; and the president of the Baylor College of Medicine and senior surgeon of the Houston Medical Center, Professor Michael DeBakey.

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Republics

6. USSR

"Commission for Public Health and Social Security"

Kiev, Pravda Ukrainskay, 27 Mar 74, p 3

Translation: A meeting was held of the Commission for Public Health and Social Security. The Commission discussed the question of carrying out the decree of the Supreme Soviet Ukrainian SSR "On the State of Medical Care and Measures for the Improvement of Public Health in the Ukrainian SSR," with respect to improving the trade in medicines and medical products. The meeting was addressed by First Deputy Minister of Health Ukrainian SSR A. N. Zolinskiy.

To carry out measures outlined in the above decree, steps are being taken for the expansion of the network of pharmacies and medical stores in the Republic and for the strengthening of their material base. At present the population and therapeutic-prophylactic institutions of the Ukrainian SSR are supplied with medicines and medical products by over 5200 pharmacies and 18,500 drugstores, 34 specialized "Medtekhnika" stores, and 330 "Optika" stores. Their total trade turnover has increased by over 20% compared with 1970.

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Pravda Ukrainskay, 27 Mar 74, p 3

Nevertheless, as has been voiced by Commission members T. G. Nelina, T. A. Zaykovskaya, Z. Ye. Goncharova, and L. A. Klopko, and by Chairman of the Commission A. A. Shalimov, the medicinal requirements of the population and therapeutic-prophylactic institutions of the Republic are yet not fully satisfied according to modern standards. The public health organs do not utilize all available potentialities for the increase of the production and expansion of the assortment of medicinal preparations in pharmaceutical plants of the oblast administrations of pharmacies, in particular of medicines which are most frequently prescribed by physicians.

In the arsenal of remedies which are employed for treatment of patients the medicinal plants and preparations made of them are used with increasing frequency. Our Republic has practically inexhaustible resources of wild medicinal raw materials, and the botanico-geographical zones of the Ukraine number about 200 species of plants which are used in popular medicine. Nonetheless these possibilities are not fully utilized and the procurement of medicinal herbal raw materials is carried out in a limited volume. Scientific research institutions and the corresponding departments of higher educational institutions do not engage sufficiently in the study of plants for the purpose of extending the sphere of their application.

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Pravda Ukrayiny, 27 Mar 74, p 3

The Commission has recommended the Ukrainian Ministry of Health ensure a thorough study of the requirements for medicines and medical products and to take steps for supplying with them fully and uniformly the pharmacies and specialized stores.

The Commission has also discussed the progress of the fulfillment of its own recommendations as regards the implementation of the legislation concerning the rights, privileges, and advantages of war invalids and families of servicemen killed in action. This question was dealt with in a report made by Chairman of the Commission A. A. Shalimov.

In the work of the Commission for Public Health and Social Security participated responsible workers of the Presidium of the Supreme Soviet Ukrainian SSR, State Planning Committee Ukrainian SSR, Ukrainian Ministry of Finance, and the People's Control Committee Ukrainian SSR.

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## III. ACTIVITIES OF SCIENTIFIC ORGANIZATIONS

## 7. USSR

## "Glacier Watch"

Moscow, Pravda, 15 Feb 74, p 3

Translation: A permanent Glaciological Station "Tuyuksu" operates on the Central Tuyuksu glacier in Transili Alatau at the altitude of about 3,500 meters. Scientists of the Kazakh Academy of Sciences here study the development of the Tian Shan glaciers in accordance with the International Hydrological Decade Program. They determine the thickness of glaciation, observe the conditions of snow accumulation, study the physical balance of mountain glaciers, and ascertain the quantity of various chemical substances falling upon the glacier along with precipitations. The estimate of these values is of practical importance since the glacier waters are widely used for irrigation. The glaciers of Dzhungarian and Transili Alatau alone supply not less than half a million cubic meters of water a year.

The regular and thorough observations of Kazakh glaciologists will make it possible to obtain important data relative to the laws governing glaciation of Central Asian mountains.

In the photographs: The "Tuyuksu" Station, and technician-hydrologist V. Tolmachev inspecting meteorological instruments.

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## 8. USSR

CHEMONIN, A., Izvestiya's own correspondent, and SHABEL'NIKOV, N., Izvestiya's social correspondent

## "All-Union Scientific Research Institute of Essential Oil Crops"

Moscow, Izvestiya, 13 Mar 74, p 4

Translation: In Alekseyevka at the Experiment Station of the All-Union Scientific Research Institute of Essential Oil Crops a new variety was developed of coriander, the most valuable raw material of essential oils.

From these oils alcohols can be prepared, imitating aromas of lemon, lily of the valley, violet, rose, linden, lily, and other aromas.

The new variety of coriander, which has been turned over to the State Strain Testing Network, has received the name of "Alekseyevskiy-40." The production test carried out in the local kolkhoz "Progress" has demonstrated its superiority over its predecessors.

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IV. CRITICISM AND COMMENTARY

9. USSR

RASTORQUYEVA, I., jurist

"Verification of Workers' Qualifications in Scientific Research Institutes"

Moscow, Izvestiya, 28 Feb 74, p 5

Translation: "In scientific research institutes a verification of workers' qualifications is being carried out within certain periods of time. This is not being done uniformly everywhere, and, most important, it often brings about controversies. It would be desirable to know the rules that govern the procedure of such verification." -- V. Kharitenov, Moscow Oblast.

The scientific-technical revolution makes high demands on specialists in scientific research institutes. That is why the verification of workers' qualifications was introduced in scientific research, planning and design, and technological organizations (with the exception of scientific workers filling respective positions as a result of competition, and administrative or junior service personnel. The list of positions liable to verification is established (with cooperation with the Central Committee of the Trade Unions) by the ministries and departments of the USSR

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RASTORQUYEVA, I., Izvestiya, 28 Feb 74, p 5

and Union republics, academies of sciences of the USSR and Union republics, and branch academies of sciences. The procedure of verification is determined by special regulations, approved by the State Committee for Science and Technology of the USSR Council of Ministers and the State Committee for Construction Affairs of the Council of Ministers USSR on 5 May 1969 and coordinated with the All-Union Central Council of Trade Unions.

The verification in scientific research institutes is carried out once in three years by commissions appointed each time by the head of a scientific research institute from among highly qualified scientific workers, specialists, and representatives of the Party and Trade Union organizations. If a scientific worker has not proved himself on the positive side in his work, the verification is allowed before the lapse of the three-year period.

The head of a scientific institute, not later than one month before the beginning of verification, issues the order that it be carried out. This order announces the procedure and concrete timings of verification, gives a list of positions liable to verification, and the composition of commissions. Young specialists performing obligatory work by assignment, pregnant women and nursing

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RASTORGUYEVA, I., Izvestiya, 28 Feb 74, p 5

mothers with infants up to one year of age, and persons that worked in a given scientific research institute less than one year are not liable to verification.

The director of the institute presents his opinion (characterization) of the worker to be verified, which must be coordinated with the Party and Trade Union organizations. The worker has a right to take cognizance beforehand of this opinion. The opinion should contain a full and objective appraisal of the work of the person undergoing verification, including his job-related, political, and personal qualities and draw a conclusion: does the worker fit the position he fills, does he deserve to be promoted to a higher position and which one, and must he improve his qualification and where. If the worker undergoing verification does not fit the position he holds, the opinion should indicate in what position or work it will be expedient to employ him in the future. The opinion is submitted to the commission together with verification findings form of the previous verification commission.

The meeting of the commission must be attended by not less than 2/3 of the approved membership, otherwise the commission is incompetent to proceed with verification. All evidence can be examined only in the presence of the worker undergoing verification.

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RASTORGUYEVA, I., Izvestiya, 28 Feb 74, p 5

Following a discussion of the matter the commission, voting by ballot, gives its appraisal of the activity of the worker. The vote is taken by ballot-papers of a prescribed form, and its results are determined by a simple majority of voters who took part in the ballot. In case of a tie vote the balloting is repeated, and if the result is the same, it is then decided that the worker is fit to hold his position. If a voter did not express his opinion, that is did not cross out from his ballot-paper this or that appraisal, it is considered that he voted for a positive appraisal. The results of the ballot are entered in the verification form, and the decision is let known to the worker and is confirmed by his signature on the verification document.

The head of the scientific research organization, within not more than two months after verification and depending on its results, takes a decision to encourage individual workers for their achievements or, in appropriate cases, to demote or remove workers unfit to hold positions they fill at present.

A worker found as a result of verification to be unfit to hold his position, may either be demoted, or transferred (by his consent) to some other work, or dismissed without approval of the Trade Union Committee. Upon discharge the following entry is made in his work book: "discharged from work as a result of verification." Upon 4/5

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transfer to another position a mention is made: "appointed to the position (designation of the position) in accordance with the results of verification." The administration has no right to discharge a person from work or to demote him to a lower position after the lapse of the two-month period from the day of verification.

Labor disputes concerning dismissal and reinstatement in a former position of the workers of scientific research institutes, found as a result of verification unfit to hold their position, are not within the jurisdiction of the Commission for Labor Disputes, nor the Factory Local Committee, nor the Courts. Such disputes are settled by higher organs. The head of the higher organ is bound to examine the application of the worker within five days and let him know without delay the results of this examination.

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10. USSR

PUSHKAR', A., special correspondent of "Izvestiya"

"The Ginseng Failure"

Moscow, Izvestiya, 13 Feb 74, p 3

**Abstract:** Ginseng - the root of life - attracted attention of individual scientists and enthusiasts since 1930's. At first unrecognized by official medicine, interest gradually increased when, on the initiative of scientists of the Far East, the Academy of Sciences USSR created the Ginseng Committee at the Academy. Its chemistry and pharmacology was studied and the chemical structure and physiological activity ascertained. The Ginseng Committee met regularly and published its reports. Ginseng was nowhere more intensively studied than in the USSR, where the number of works published on it exceeds 200. After a few small-scale experiments in its artificial cultivation, it was decided to organize it on an industrial basis. The lack of cooperation of local organs of the Far East and that of the VILR [All-Union Scientific Research Institute of Medicinal Plants] was overcome and in 1961 the "Zhen'shen" Sovkhoz was created. After a few years, however, the plantation, instead of growing as planned, began to dwindle, shrinking from five hectares to three, and its very cultivation is now in danger.

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PUSHKAR', A., Izvestiya, 13 Feb 74, p 3

In a series of interviews conducted on the spot the Correspondent of Izvestiya has investigated and describes the causes of the lack of success of this enterprise, which are due in the main to a poor planning, wrong agrotechnical approach, selection of an unsuited area for plantation, lack of competent scientific guidance, and lack of support from administrative organs.

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V. AWARDS, CONTESTS, APPOINTMENTS, AND PERSONALITIES

11. USSR

"V. M. Glushkov"

Kiev, Visnyk Akademiyi Nauk Ukrayins'koyi RSR, No 8, Aug 73, pp 109-111

Translations: The name of Viktor Mykhaylovych Glushkov, eminent Soviet mathematician and cyberneticist, talented science organizer, and founder of the Kiev School of Cybernetics which represents Soviet cybernetics with honor throughout the world, is well known to wide circles of the scientific community in our country and abroad.

V. M. Glushkov's first scientific works in modern algebra were done a quarter of a century ago. Their basic results (solution of Hilbert's generalized fifth problem, study of the properties and structure of locally bicompact groups and Lie algebras) are justly deemed fundamental.

Soviet science at the end of the 1950s and beginning of the 1960s was characterized by increased requirements for applied mathematics and cybernetics. It was in this period that Viktor Mykhaylovych closely linked his creative interests with elaboration of the theoretical principles of cybernetics and computer technology.

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Visnyk Akademiyi Nauk Ukrayins'koyi RSR, No 8, Aug 73, pp 109-111

Mention must be made of his monograph Sintez Tsifrovych Avtomatov (Synthesis of Digital Automata) (1962), which not only contained profound theoretical generalizations on the theory of discrete automata, but also suggested an orderly methodology for the construction of various computer devices.

V. M. Glushkov is characterized by breadth of scientific interests, innovativeness, and scientific intuition. Not one to confine himself within the narrow framework of individual theories and specialties, he energetically and enthusiastically tackles little-studied problems and finds original solutions. The algebraic approaches he has proposed to the synthesis of automata, the construction of various divisions in the theory of computers, and mathematical programming, have proved unusually fruitful and found application among practical exports in the creation of new electronic computers of various classes and software systems therefor.

Further activity of the scientist has been devoted to treatment of the general theory of computing systems and machines, new mathematical methods for the solution of diverse problems in the automation of computer design, creation of new approaches to the solution of problems in economic cybernetics and problems in the simulation of complex systems on general-purpose computers, construction of the theory of

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Visnyk Akademiyi Nauk Ukrayins'koyi RSR, No 8, Aug 73, pp 109-111

automated computer-aided data-processing systems. He has suggested and substantiated methods for quantitatively evaluating the performance of computers and various systems based on the utilization of computer devices and has given a philosophical substantiation of the achievements and potentialities of mathematics and cybernetics.

The progress of the Order of Lenin Institute of Cybernetics of the Academy of Sciences Ukrainian SSR is linked with the name of V. M. Glushkov. He was the initiator of its establishment at the beginning of the 1960s and has headed it since the day of its founding. From a laboratory with 50 employees to an academic institute with several thousand -- that is the course of events in the formation and development of the staff.

Let us point out that almost all the important work that has contributed to the merited fame of the Institute of Cybernetics has been conducted under the scientific guidance of V. M. Glushkov and is the direct translation into reality of ideas advanced by him. These are the development of such well-known electronic computers as the Dnepr-1, Promin', Mir-1, Mir-2, Dnepr-2, and Ros', the creation of the first model Soviet automated control systems -- the L'vov and Gal'vanyk, the development of the now Proekt automated computer design system, and much more.

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Visnyk Akademiyi Nauk Ukrayins'koyi RSR, No 8, Aug 73, pp 109-111

V. M. Glushkov deserves great credit for generating the basic ideas of the creation of automated control systems from the enterprise to the highest levels of control organs. On his initiative and under his guidance, in 1964-1965 a preliminary plan of the country's unified state network of computer centers was elaborated, which has become the basis of present-day concepts of the statewide automated data-gathering and processing system for accounting, planning and administration of the national economy, the need to create which was registered in the directives of the Twenty-Fourth Congress of the CPSU. V. M. Glushkov's interesting theoretical research in the field of macroeconomics is associated with this task.

The scientist has always keenly perceived the practical world's needs for scientific generalizations and new methods. As a rule, his monographs comprehensively reflect the breakthroughs of scientific research in a new field that a wide audience of scientists and engineers need in their everyday work. That is why his books Sintez Tsifrovyykh Avtomatov (Synthesis of Digital Automata), Vvedeniye v Kibernetiku (Introduction to Cybernetics), Vvedeniye v ASU (Introduction to Automated Control Systems) etc. are both a necessity to the reader, and also popular and timely.

V. M. Glushkov is doing a tremendous science-organizational work as vice-president of the Academy of Sciences Ukrainian SSR, and head of the Scientific Council for Computer Technology and Control Systems of the State Committee for Science and

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Visnyk Akademiyi Nauk Ukrayins'koyi RSR, No 8, Aug 73, pp 109-111

Technology of the Council of Ministers USSR, as well as of the Presidium of the Academy of Sciences USSR.

For his great contribution to the development of Soviet science and the training of scientific personnel, the high rank of Hero of Socialist Labor has been conferred upon V. M. Glushkov, and he has been awarded the Lenin Prize and the State Prizes USSR and Ukrainian SSR.

V. M. Glushkov is rendering important assistance to scientists in countries of the socialist community in the launching and development of cybernetic research and in the organization of work on the creation of automatic control systems. He is doing much work for the successful activity of the international cybernetics organization -- the International Federation for Information Processing -- and has headed the program committee since 1966.

Pioneer in the establishment of the Cybernetics Faculty at Kiev State University imeni T. G. Shevchenko, Academician V. M. Glushkov lectures here to students and post-graduates and heads the Chair of Theoretical Cybernetics. Since 1964 he has headed the basic chair of the Moscow Physicotechnical Institute under the Cybernetics

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Visnyk Akademiyi Nauk Ukrayins'koyi RSR, No 8, Aug 73, pp 109-111

Institute of the Academy of Sciences Ukrainian SSR. A marvelous pedagogue, he generously devotes his learning to young people and encourages them to creative boldness and research. Many of his students have become highly skilled specialists and are successfully serving in science and the national economy.

V. M. Glushkov is a tireless popularizer of science and the author of numerous articles in newspapers and popular-science magazines, as well as uncommonly interesting lectures on various problems in science and practice.

The scientist gives much attention to public activity as a member of the Central Committee of the Ukrainian Communist Party and a deputy of the Supreme Soviet USSR.

In congratulating the scientist on his fiftieth birthday the scientific community wishes Viktor Mykhaylovych continued fruitful activity and great success in his scientific work for the good of our fatherland.

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12. USSR

MELIK-PASHAYEVA, A., Novosibirsk

"Yu. Yershov"

Moscow, Izvestiya, 1 Feb 74, p 4

**Abstract:** The article gives an outline of the scientific career and a rapid rise of Yuriy Yershov, who thanks to his tenacity and talent has become one of the most outstanding young scientists of Siberia at the age of 33.

Having been refused by the Moscow Physicotechnical Institute because of a "poor"-two mark received for mathematics at the entrance examinations, Yershov went to work at a plant in his native Novosibirsk as a lathe operator. However, his academic failure did not discourage him. He continued to study mathematics, obtained a Lenin scholarship, entered Novosibirsk State University, and graduating from it in 1963 he defended his candidate's dissertation. Three years later he received his doctorate for a dissertation relative to an almost unexplored domain of mathematics, the elementary field theory.

In 1967 he delivered a report at the International Congress on Logic, Philosophy, and Methodology of Science in Amsterdam, and in 1966 and 1970 by personal invitation 1/5

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MELIK-PASHAYEVA, A., Izvestiya, 1 Feb 74, p 4

he addressed the International Mathematical Congresses held in Moscow and Nice. He is a member of the International Association of Symbolic Logic, and the Italian Society of Mathematicians.

He heads now the work on the numeration theory, a new domain of mathematical logic of fundamental importance for communication between man and electronic computers.

On 19 November 1970 the Division of Mathematics of the Academy of Sciences USSR recommended the General Meeting of the Academy to elect the 30-year old Yershov as Corresponding Membership of the Academy of Sciences USSR.

Yershov has become a symbol and personification of the ideas embodied in the program of the Siberian Department of the Academy of Sciences USSR directed toward the combination of fundamental sciences with live practice and education of the youth. In recent years he headed the Olympic Committee of the Siberian Department of the Academy of Sciences USSR, organizing the All-Siberian Scientific Olympics of School Children which plays an important role as a gateway to science.

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MELIK-PASHAYEVA, A., Izvestiya, 1 Feb 74, p 4

Thus at 33, Prof Yershov holds in his hands the future of many youngsters from the remotest places of Siberia, the extreme North, Central Asia, and the Far East. Together with the Siberian Department of the Academy he shares the tremendous responsibility for the preparing of mathematical cadres for Siberia. The course of the scientific career of Yershov is not unique, and there are other Siberian scientists who follow the same path. It reflects the march of fundamental sciences toward the East, which is in progress since the beginning of the last decade and is aimed at the development of the boundless country of Siberia.

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13. USSR

"Awards of Orders and Medals"

Moscow, Pravda, 23 Feb 74, p 2

Translation: For active participation in the organization and realization of the high-latitude "Sever" expeditions and for courage and valor displayed on this occasion, the Presidium of the Supreme Soviet USSR, by decree of 22 February 1974, has awarded orders and medals of the USSR to workers of the Main Administration of the Hydro-meteorological Service of the Council of Ministers USSR and the Ministry of Civil Aviation who distinguished themselves most.

The Order of Lenin was conferred upon the leader of the "Sever-25" Expedition and senior scientific associate of the Arctic and Antarctic Scientific Research Institute, N. I. Blinov, and Deputy Director of the Arctic and Antarctic Scientific Research Institute B. A. Krutskikh, and the Order of the October Revolution was bestowed on Commander of the Flying Detachment of the Administration of Civil Aviation of Central Regions and the Arctic Ye. G. Zhuravlev and Deputy Director of the Arctic and Antarctic Scientific Research Institute N. I. Tyabin.

The Order of Labor Red Banner was awarded to 3 persons, the Badge of Honor to 8, the medal "For Labor Valor" to 20, and medal "For Distinction in Labor," to 20 persons.

The decree is published in "News of the Supreme Soviet USSR" and in the local press.

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14. USSR

KAZAKOV, M.

"Medals of the USSR Academy of Sciences Awarded"

Moscow, Izvestiya, 2 Mar 74, p 5

Translation: The selection was made, by commissions of experts of the USSR Academy of Sciences, from among laureates whose works were winners in a previous All-Union Competition. It was still rather difficult to choose the best one from among the best works. Recently the winner was announced of the last of the five medals of the USSR Academy of Sciences for the best students' scientific work of 1973, a graduate of the Moscow Institute of Electronic Engineering, Yevgeniy Frolov. His work "The Solution of a Problem in the Controllability of Nonlinear Systems" was considered the best in the domain of physicomathematical sciences.

In chemicotechnological and biological sciences the medals were awarded to Viktor Kartsev from Moscow State University and to Mart Saarm from Tartu University, in earth sciences to Igor Fedorov from Novosibirsk University, and in social sciences to Nikolay Kozin from Saratov University.

"Research carried out by Frolov shows that he is a very talented mathematician," says Corresponding Member of the USSR Academy of Sciences T. M. Zmeyev. "A point was 1/6

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KAZAKOV, M., Izvestiya, 2 Mar 74, p 5

taken in certain space. It was required to be proved that at a certain form of a selected regularity of motion it will get to a preset point situated in its environs. Does this not remind one of a traveler in a school book of problems in arithmetic who must get from point A to point B? With that exception, however, that the wandering point is of definite importance for the national economy, for some economic and mechanical processes may be reduced to a similar simplified scheme.

In his third year Frolov took part in a seminar of the Chair of Cybernetics. He was given a problem: "There is some vagueness here, and several ways of solving it are possible. Please think!" He began to think, turned over in his mind several variants, calculated, and it seemed to him that he was about to find some new approach. But then he came across a recent monograph of a foreigner nor, and found that the means of doing it was discovered before him. He gratefully remembered his teachers "with an English bias," and tackled another, more complex problem. In solving it he was helped by the experience of the first failure, by his scientific leader, and by painstakingness.

The case of Igor Fedorov of Novosibirsk University was exactly the same. One of the experts, Doctor of Geologicomineralogical Sciences Yu. L. Orlov, considers that after a further elaboration his work could be awarded a scientific degree. 2/6

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KAZAKOV, M., Izvestiya, 2 Mar 74, p 5

"Fedorov is dealing with zeolites, an interesting group of minerals, which is widely used at present for the separation of various substances in processing petroleum products. They are frequently encountered in nature, but their deposits are as a rule small. More often, zeolites are synthesized artificially. One of the zeolite types was synthesized by Fedorov."

Scientific Secretary of the Commission Candidate of Philological Sciences V. S. Barukhov says:

"N. Kozin of Saratov University discusses the interaction and limits between historical description, historical explanation, and historical expectation. To discuss this, twentieth century material was used. Boldly, very boldly! For the first time I encounter a work where a student has tackled the methodology of knowledge and succeeded."

When he was in his freshman year, it was written about him in the university wall newspaper: "A man with his own understanding of history." For a long time he pondered what to take up as a study, being equally interested in modern history and philosophy.

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KAZAKOV, M., Izvestiya, 2 Mar 74, p 5

In his second year, he wrote an essay on the essence of cognition. It has been noticed. The University expected him to produce something of importance. And there is a medal of the "Great Academy."

In many universities of the world the graduates still receive diplomas with a mention: "Doctor of Philosophy in Chemistry (Physics, Biology, etc.). Perhaps, we could call Viktor Kartsev a philosopher in chemistry. But his philosophical interest in chemistry has produced quite tangible practical result. As President of the Commission Corresponding Member of the USSR Academy of Sciences I. V. Berezin explains, Kartsev's work opens wide an hopeful prospects for the synthesis of basically new compounds which may be used as medicinal preparations and additives to polymers.

"Kartsev is a patient and persistent person. His character was formed by hundreds of experiments and years of study. He has a good preceptor, Prof A. N. Kost, and he considers that the laboratory he works in is the best in the Chair, and the Chair is the best of the University. As a matter of fact the Chair of Chemistry, as is well known, is the best Chair of Moscow State University..."

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KAZAKOV, M., Izvestiya, 2 Mar 74, p 5

"I am sure that Mart Saarm thinks the same about his laboratory, continues Derozin. "His work deals with the study of ribosomes, the microscopic mechanisms of the cell. This molecular machine synthesizes protein of a strictly preset structure and in accordance with the genetic information that comes from the cell nucleus. The problem of the structure and function of ribosomes is the key problem in molecular biology. Saarm has applied specially selected enzymes which split biopolymers that enter into the composition of ribosomes. By studying the composition of products being formed in the process, the young scientist has learned much about the structure of one of the elements of the cell.

Such are the five works, each of which is in its own way important.

Medals of the Academy of Sciences constitute very high appraisal. It was given to the authors of works and to institutions of higher education in which they had studied. This is, so to speak, the assessment of the attention with which in the recent years the students' scientific creativity is surrounded.

Many things had to happen in order that these five scientific works, worthy of the attention of the USSR Academy of Sciences, could appear. Hundreds of students!

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KAZAKOV, M., Izvestiya, 2 Mar 74, p 5

design bureaus and scientific societies had to appear, scientific research of students had to be included in tens of universities in their curricula, students' scientific circles in the departments had to become sufficiently numerous, and their first findings to shaken age-long opinion of diploma papers as being only a verification of methodical preparedness of a specialist.

A partition, which separated the students' research from all that is done by the university scientists, was broken. The results of competitions show considerable changes for the better: disparity between the present students' papers and those of the past is enormous. Indeed, as Lomonosov had said once: "Be bold now that you have been encouraged!"

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## 15. USSR

POGODAYEV, G., responsible organizer of the Department of Scientific Youth, Central Committee of the All-Union Lenin Young Communist League; Candidate of Medical Sciences; and FILIPPOV, O., leader of the Information Group, Central Scientific Research Institute of Sanitary Education; Candidate of Medical Sciences

"Laureates of the Komsomol Prize"

Moscow, Meditsinskaya Gazeta, 1 Jan 74, p 3

Translation: Every year on the day of the creation of the VLKSM [All-Union Lenin Young Communist League], to stimulate the best young scientists, aspirants, instructors of higher educational institutions, workers, and collective farmers, are awarded prizes of the Lenin Komsomol in science, technology, and production. The first among medical workers to be honored by this award was a scientific associate of the Institute of Medical Radiology of the Academy of Medical Sciences USSR and secretary of the Committee of VLKSM, Anatoliy Nikolayevich Dedenkev, for the production and application of radioactive preparations which are being resolved in the organism.

Three of our colleagues are among laureates of the Lenin Komsomol Prizes for 1973. These are: Doctor of Medical Sciences, senior scientific associate of the

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## USSR

POGODAYEV, G., et al., Meditsinskaya Gazeta, 1 Jan 74, p 3

Institute of Biophysics of the Ministry of Health USSR, R. M. Khaitov; Candidate of Medical Sciences, senior scientific associate of the Moscow Medical Stomatological Institute, A. I. Kolinko; and junior scientific associate of the Institute of Experimental and Clinical Oncology of the Academy of Medical Sciences USSR, G. A. Bannikov.

Each of them has his own biography, character, and enthusiasms. But there is one thing that brings them together, and this is the entry into science. The work on scientific problems, which had excited them, was begun when they were still students, members of SNO [Students' Scientific Societies].

This had enabled Rakhim Kaitov within half a year after graduation from the Samarkand Medical Institute to defend his candidate's dissertation. And then he has chosen to study the unknown aspects of the transplantation of hemopoietic tissues.

An enormous work was performed by R. Khaitov within but five years. He developed several new experimental models and systems, and unraveled and interpreted new effects in immunology and radiobiology.

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At present the 29 year-old Doctor of Medical Sciences Rakhim Khatov is the party group organizer of the Laboratory of the Institute of Biophysics of the Ministry of Health USSR and member of the Commission for the Propaganda of Knowledge among Young People at the Board of the All-Union Society "Znaniye." He is the author of over 50 scientific works.

Albina Kolinko had been fascinated by ophthalmology in her fifth year of the Institute. At that time the Chair of Eye Diseases of the Arkhangelsk Medical Institute in which she was studying was headed by Prof S. N. Fedorov. He was the same Prof Fedorov who was the first to make operations of the implantation of artificial crystalline lenses. This was six years ago. After graduating from the Institute Albina Kolinko studied again, now in the clinical internship. Now, she heads the Eye Department of Moscow Hospital No 50 and was appointed for the post of senior scientific associate of the Chair of Eye Diseases of the Moscow Medical Stomatological Institute.

During all these years she worked under the guidance of Prof S. N. Fedorov. He set before his assistant the task of determination of optical parameters of intraocular lenses. She had to start studying again, and go through a course of 3/8

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optics. Then, she had to determine optical parameters of the eye, by the most modern methods. Gradually a harmonious system was formed for the calculation of optics of the eye having an artificial crystalline lens. The derived formulas and diagrams showed that the necessary strength of the lens can be calculated with great accuracy before the operation.

A. Kolinko has worked out recommendations for calculations not only in emmetropia, but also in myopia and hypermetropia of the healthy eye. She provided calculations for long-distance and short-distance vision, depending upon the accommodation volume of the sound eye.

All these methods have been tested in clinical practice. Albina Ivanovna has performed over 300 operations. Their remote results show the accuracy of the calculations of the young scientist. The tables produced by her are consulted at present by all those who perform implantation of correcting lenses.

Grigoriy Bannikov graduated only four years ago from Moscow State University imeni M. V. Lomonosov. When in his second year he had already started to work in the scientific society conducted by the professor of the Institute of Experimental and

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Clinical Oncology of the Academy of Medical Sciences USSR, Yuriy Markovich Vasil'yev. In the beginning Grigoriy Bannikov used to, as he says, to wash laboratory vessels of medical personnel. At the end of studies, in his fifth year, he had already mastered the methods of cultivation of tissues, autoradiography, basic analytical and preparative methods of the study of the chemistry of proteins, as well as modern immunochemical techniques.

It is a small wonder that during but a few years Bannikov has performed, in the words of a reviewer, "a first-class scientific research."

Immunologists know that the selective binding of the chemical carcinogen depends upon the presence of a special protein. How can this protein be obtained in a pure form, and how can one ascertain its distribution in the tissues and the various organs which are subjected to the action of carcinogen? There was no clear answer to that, since no one was in possession of a clearly worked out technique.

Grigoriy Bannikov has started his experiments. When one is 25 years old a work day lasting 12 hours does not seem to be long, but still, sometimes, one has to drive away the thought that all is in vain, nothing will develop from it, the more so

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since investigations devoted to this protein have already been conducted, and the results are very modest.

He obtained a purified protein, viz, ligandin. And, this is especially important, he isolated the strictly monospecific antibodies to the protein binding carcinogen. They were used by Bannikov for the study of tissular and cellular localization of ligandin in the normal and tumorous tissues.

The works of Bannikov completely disprove the "theory of precipitation," one of the most popular theories of chemical carcinogenesis. The new data permit us to explain the differential sensitivity of hepatocytes to the toxic action of the carcinogen and show why in the acute stage of carcinogenesis the cells are perishing, which are distributed around the central vein. Materials concerning the connections of protein which binds carcinogen with the degree of differentiation of hepatocyte provide investigators with an important additional method of differentiation.

What we have just spoken about constitutes a bygone stage. Science does not stand still. Each of the three scientists is now planning new research.

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R. M. Khaitov has been appointed the leader of a research group. The program of research has been planned for several years ahead. The group will study various aspects of immunogenetics and interaction of lymphoid cells. Scientists want to find out the mechanisms of the immune reactions, in order to find ways for a selective stimulation or on the contrary to arrest the individual stages of immunity. This is necessary for infectious immunology and for transplantation of tissues and organs.

Now operations await A. I. Kolinko. There must be checked several modern chemical materials from which specialists propose manufacturing artificial crystalline lenses.

The remote results which were observed by Professor S. N. Fedorov show that during a period of 12 years the majority of patients were in excellent condition. Nevertheless, he considers that the material which would satisfy physicians in all respects has not yet been found.

Some interesting aspects begin to show in the work of G. A. Bannikov. It may happen that the new protein serves as a regulator of the activity of genes.

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The laureates have a great deal of work ahead of them. But they are young and gifted. Each of them appraises his results modestly, and speaks more of his teachers than of himself. It is gratifying that our science has been joined by the young people who are enamoured of it and devoted to it. Each of the laureates represents not only an interesting human destiny, but also destiny of research, and the beginning of the new creative ideas.

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## VI. OBITUARIES OF SOVIET SCIENTISTS

16. USSR

"A. I. Dykova"

Odessa, Oftal'mologicheskiy Zhurnal, No 8, 1973, p 637

**Abstract:** Anfisa Ivanovna Dykova, Doctor of Medical Sciences, professor, and head of the Chair of Eye Diseases of the Poltava Medical Stomatological Institute, died on 30 July 1973. His obituary is signed by the rectorate and party committee of the Poltava Medical Stomatological Institute, the L'vovskaya Oblast Scientific Society of Ophthalmologists, and the Poltavskaya Oblast Scientific Society of Ophthalmologists.

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17. USSR

UDC 616.5/616.97 (092) Kazakov

"V. I. Kazakov"

Moscow, Vostnik Dermatologii i Venerologii, No 2, 1974, pp 92-93

**Abstract:** Prof Viktor Ivanovich Kazakov, head of the Chair of Dermato-Venerological Diseases of the Astrakhan Medical Institute, died on 25 August 1973.

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18. USSR

"A. D. Kovalenko"

Kiev, Visnyk Akademii Nauk Ukrayins'koy RSR, No 11, 1973, pp 110-111

Abstract: Anatoliy Dmitriyovich Kovalenko, laureate of the State Prize Ukrainian SSR, Academician of the Ukrainian Academy of Sciences, Doctor of Technical Sciences, and former director of the Institute of Mechanics of the Ukrainian Academy of Sciences, died on 19 September 1973. His obituary is signed by the Ukrainian Academy of Sciences; the Ministry of Higher and Secondary Specialized Education Ukrainian SSR; the Division of Mathematics, Mechanics, and Cybernetics of the Ukrainian Academy of Sciences; and the Institute of Mechanics of the Ukrainian Academy of Sciences.

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19. USSR

UDC 616.21(092) Nadzharyan

"N. A. Nadzharyan"

Moscow, Vestnik Otorinolaringologii, No 5, 1973, pp 117-118

Abstract: Prof Nikolay Arsen'yevich Nadzharyan, head of the Chair of Otorhinolaryngology of the Yerevan Institute for the Advanced Training of Physicians, CPSU member, and Honored Scientist Armenian SSR, died on 31 December 1972.

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20. USSR

"L. N. Sretenskiy"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 6, 1973, pp 182-185

Abstract: Leonid Nikoleyevich Sretenskiy, Corresponding Member of the USSR Academy of Sciences, senior scientific associate of the Interdepartmental Committee for Seismology and Earthquake-Proof Construction under the Presidium of the USSR Academy of Sciences, and associate of the Mechanics and Mathematical Faculty of Moscow State University, died on 8 August 1973.

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21. USSR

UDC 616.5/616.97 (Tursunov)

"N. T. Tursunov"

Moscow, Vestnik Dermatologii i Venerologii, No 2, 1974, p 94

Abstract: Nishan Tursunovich Tursunov, director of the Uzbek Scientific Research Dermato-Venerological Institute, Honored Physician Uzbek SSR, Candidate of Medical Sciences, and senior scientific associate, died on 9 September 1973.

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VII. FOREIGN SCIENTIFIC COOPERATION

22. USSR

"Soviet-Austrian Meeting"

Moscow, Pravda, 12 Mar 74, p 4

Translation: The 6th Session of the Mixed Soviet-Austrian Commission for Economic and Scientific-Technical Cooperation began its work on 11 March 1974 in Moscow under the chairmanship of Minister of Foreign Trade USSR N. S. Patolichov. The Austrian delegation is headed by Austrian Minister of Trade, Commerce, and Industry Doctor J. Staribacher.

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23. USSR

POKHVALOVA, M., correspondent of "Meditinskaya Gazeta"

"Cooperation Between Finnish and Soviet Pediatricians"

Moscow, Meditsinskaya Gazeta, 13 Mar 74, p 4

Translation: The period of time from 25 March through 3 April will be set apart in the Soviet Union as "Days of Finnish Science and Technology." In Moscow at the Polytechnical Museum will be organized a special show to demonstrate the scientific-technical cooperation of our neighboring countries. One of its sections is devoted to medical science and public health. At the Institute of Cardiology imeni A. L. Myasnikov of the Academy of Medical Sciences USSR, a Symposium will be held of Soviet and Finnish cardiologists, at which lectures will be delivered by Finnish scientists.

In connection with forthcoming Days of Finnish Science and Technology, Correspondent of "Meditinskaya Gazeta" M. Pohvalova asked the director of the Institute of Pediatrics and Corresponding Member of the USSR Academy of Medical Sciences, Prof M. Ya. Studenikin, to tell us about the cooperation between Finnish and Soviet pediatricians.

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POKHVALOVA, M., Meditsinskaya Gazeta, 13 Mar 74, p 4

"The Institute of Pediatrics of the Academy of Medical Sciences USSR," said Prof M. Ya. Studenikin, "has established close scientific contacts with the Pediatric Clinic of Helsinki, which is headed by one of the outstanding scientists of this branch of medicine, Secretary of the International Association of Pediatricians Niilo Hallman. It must be noted that investigations in the field of pediatrics are part of general program which is carried out jointly by Soviet and Finnish scientific research medical institutes."

"The theme of our joint investigations," continued M. Ya. Studenikin, "is one of the most topical problems, viz., the influence of hypoxia on the developing brain of the fetus and child."

"We have drawn jointly the concrete program of investigations, determined its participants from both sides, and named specific executors."

"The Institute of Pediatrics of the USSR Academy of Sciences and the Pediatric Clinic of Helsinki have great experience of work in the domain of the study of perinatal pathology, and have at their disposal qualified specialists and modern equipment. And we may say at present that the cooperation of the two highly

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POKHVALOVA, M., Meditsinskaya Gazeta, 13 Mar 74, p 4

competent scientific collectives has produced definite results in the elaboration of this difficult problem, in which not all is as yet accessible for investigation. Symposia were held in Helsinki and in Moscow, at which Soviet and Finnish scientists discussed the results of joint investigations."

"Soviet specialists acquainted themselves with experience of their Finnish colleagues. More than once we received in the Soviet Union pediatricians from Finland, who manifest great interest in the organization of Soviet public health, protection of children's health, and problems of the planning and coordination of scientific research. The results of the joint work of Soviet and Finnish scientists are about to be published."

"The cooperation of physicians of the neighboring countries," concluded M. Ya. Studenikin, "is an excellent example of the usefulness of contacts between specialists for the elaboration of such important problems, as the life and health of children. At the same time one should also stress the fact that the exchange of achievements in the field of medicine and the joint work constitute concrete manifestations of friendly relations that were firmly established between the two neighboring countries of the Soviet Union and Finland."

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24. USSR

CHESANOVA, T., correspondent of "Leningradskaya Pravda"

"Soviet-French Experiment in Studying Upper Atmosphere Layers of High Latitudes"

Leningrad, Leningradskaya Pravda, 29 Jan 74, p 2

Translation: Auditoriums of the Physics Faculty of Leningrad State University are deserted. Holidays have begun. But there will be no recess for the instructors, associates of the Laboratory of Aeronomy of the Chair of Earth Physics. On the contrary, it is at this time that the scientists will begin experiments for which they were long preparing. Special programs were worked out and unique equipment adjusted. With their aid, the Leningrad geophysicists will take part in a joint Soviet-French experiment in studying upper atmosphere layers of high latitudes. This expedition is being carried out within the framework of the international project of "Intercosmos."

In connection with this staff members of the Laboratory set off for geophysical stations of the University in the North, and its leader, Doctor of Physicomathematical Sciences M. I. Pudovkin, left for Sweden. "It appears that it is there that the launching pad for carrying out the experiment has been established?" With this question our correspondent began her interview with M. I. Pudovkin, which took place on the eve of his departure.

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CHESANOVA, T., Leningradskaya Pravda, 29 Jan 74, p 2

"The Government of Sweden has placed at the disposal of scientists of the Soviet Union and France the geophysical range near the northern town of Kiruna. Eighteen aerostats with Soviet and French equipment will be started up from here at short intervals. These 'flying laboratories,' rising up from the Swedish soil, will reach the northern spurs of the Urals. The length of this airway equals almost 2,000 kilometers."

[Question] "What is the purpose of this experiment?"

[Answer] "I'll give you an example. On the ocean, far from the shore a vessel sails. Everything proceeds normally. The ship's course is plotted reliably by the compass, and a steady radio communication is maintained. And all of a sudden... The compass needle turns almost by 90 degrees. Then it begins to 'dance,' and its 'dance' is caused by a strong magnetic storm, which broke out somewhere in the upper atmosphere layers. In such a case the compass becomes useless. The radio signals will be of no help either, for all radio communication is suddenly disrupted... What we should do in such situations? Can we somehow anticipate them?"

All these phenomena have still many enigmas. The experiment will permit us to more fully understand the picture of the near space when the masses of charged particles intrude from the cosmos into the polar latitudes."

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CHESANOVA, T., Leningradskaya Pravda, 29 Jan 74, p 2

[Question] "How is the fact explained that preference in these investigations is given to aerostats? After all, we have satellites and rockets?"

[Answer] "The equipment which is installed on satellites and rockets certainly also records the echoes of storms breaking out in cosmos. But the speed of a satellite is 8 kilometers per second. Once the instruments on it will record a blip of particle flux, and next at the same point the instruments will keep quiet."

"Aerostats, as compared with satellites, are slow-moving craft. In that region, which is of interest to us as geophysicists, they will hang in the air comparatively long, and then they will line up chainwise, and thus will make it possible to investigate the disturbance in several points simultaneously."

[Question] "But it may also happen that wind will carry them away in some other direction!"

[Answer] "Certainly the weather is unpredictable. However, during these winter months in the North, at the altitude of 30 to 40 kilometers, steady westerly

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CHESANOVA, T., Leningradskaya Pravda, 29 Jan 74, p 2

winds predominate which prevail exactly in the zone of northern lights. We will 'hunt' the magnetic storms, and we hope that the wind will help us. The more so because it is precisely our group which is responsible for the prognosis of geomagnetic situation.

[Question] "How the observation of the 'slow-moving craft' is to be performed?"

[Answer] "Signal reception from aerostats will be carried on continuously over whole distance from Sweden to the Urals. Geophysical stations will be passing by turns their assignment to one another. On the Soviet side, in this experiment will take part scientists of the Institute of Terrestrial Magnetism, Ionosphere, and Radio Wave Propagation, the Polar Geophysical Institute, and other organizations. Leningrad geophysicists have supplied all needed equipment to several test ranges in Arkhangel'skaya and Murmanskaya Oblasts and in Karel'skaya ASSR.

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## VIII. NEW ORGANIZATIONS

25. USSR

YEMEL'YANOV, O., correspondent of "Vechernaya Moskva"

"All-Union Cardiological Center of the USSR Academy of Medical Sciences"

Moscow, Vechernaya Moskva, 28 Feb 74, p 2

Translation: On the western outskirts of Moscow, in the area of Cherepkovo, where the Rublevskoye Highway intersects the Circular Superhighway, construction is beginning on the All-Union Cardiological Center of the USSR Academy of Medical Sciences. This unique scientific research therapeutic institution is being erected with funds provided by All-Union Communist "Sibbetnik" held in 1971. The Center was designed by a large collective of architects, engineers, and technologists of the Moscow Scientific Research Design and Planning Institute of Centers of Culture, Rest, Athletics, and Public Health. Architects I. M. Vinogradskiy and Ya. D. Mukhamedkhanov are in charge of the project. The construction of the Center to be erected is commented upon by its architect, Ya. D. Mukhamedkhanov, in an interview with correspondent of "Vechernaya Moskva" O. Yemel'yanov.

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YEMEL'YANOV, O., Vechernaya Moskva, 28 Feb 74, p 2

Mukhamedkhanov: In the first place, about the purpose of the Cardiological Center. It will contribute to further development of medical knowledge in the domain of prophylaxis and treatment of cardiovascular diseases. Here, on the basis of the latest achievements of the Soviet and world science will be worked out new methods of the treatment of atherosclerosis, arterial hypertension, coronary and cardiac insufficiency, and heart defects. The Center will assume scientific and methodical leadership in the prophylaxis and treatment of cardiovascular diseases in a wide network of polyclinics and hospitals, and it will also train highly qualified cardiologists for scientific research, educational, and therapeutic institutions.

In designing the Center we were consulted by prominent cardiologists of the country headed by Chairman of the Scientific Council for Cardiovascular Diseases of the USSR Academy of Medical Sciences Ye. I. Chazov.

Question: Why was this very spot chosen for the construction of the Center?

Answer: There are no industrial facilities in the immediate vicinity of the future buildings of the Center and it will be surrounded by forests and fresh air. Besides the Rublevskoye Highway and the Circular Superhighway are connected by a cross-over road, from which convenient access drives to the Center can be arranged.

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YEMEL'YANOV, O., Vechernyaya Moskva, 28 Feb 74, p 2

Question: What will be the general outlook of the facilities of the Center?

Answer: It will consist of four functional groups of facilities distributed in four zones. Zone A, intended for theoretical work, will be composed of an administrative building, a conference hall, and a vivarium. Zone B will contain clinical and laboratory buildings. Zone C will house a polyclinic. And, finally, the last zone will be formed by storerooms and various subsidiary buildings. All buildings will have common basements and will be interconnected by a corridor system.

The picturesque surroundings has permitted the architects to devise three concentric belts around the central area. On the south and on the east the forest comes up to the buildings. The shady paths for strolling will lead in that direction.

The organization of the flow of traffic within the area of the Center was given careful attention. It was taken into account that the number of patients requiring absolute peace will be especially great. A special protection against vibration and noise has been envisaged. Separate routes will be provided for the ambulances. Tunnels for transport and for pedestrians have been also planned.

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YEMEL'YANOV, O., Vechernyaya Moskva, 28 Feb 74, p 2

Question: Tell us please about architectural features of buildings.

Answer: All buildings will be constructed from precast reinforced concrete units produced by our industry on the basis of unified specifications. In finishing the rooms and facades wide use will be made of granite, marble, travertine, aluminum, glass, and fine wood.

Question: My last query, in brief, concerns fittings and other amenities with which buildings will be equipped.

Answer: A centralized system of dust and refuse removal has been planned. It consists of a system of pipes stretching over all buildings and a central vacuum-pumping assembly. Plans also provide for air-conditioning, radio and television communication, and a reliable ward signalling system. Utilization of the latest achievements of science and technology will make possible to ensure the optimum conditions of care and treatment of patients, and the fruitful work of scientific workers and physicians.

The picture shows a general outlook of buildings of the All-Union Cardiological Center project.

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26. USSR

MALINSKIY, N., Taganrog

"Scientific Research Institute of Uniform Microelectronic Computer Structures"

Moscow, Pravda, 13 Mar 74, p 6

Translation: The structural design of the Scientific Research Institute of Uniform Microelectronic Computer Structures of the North-Caucasian Center of the Higher School has been approved.

The Institute was created at the Taganrog Radiotechnical Vuz and forms a section of the educational, scientific, and production complex which functions here. The structural design of the Institute was worked out by Ukrainian specialists. Its construction will begin next year.

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27. USSR

DOLENKO, A., special correspondent of "Izvestiya"

"New Polytechnical Institute in Vinnitsa"

Moscow, Izvestiya, 28 Feb 74, p 5

Translation: A Polytechnical Institute has been created here [Vinnitsa].

Educational buildings with laboratories and workshops, gymnasiums and hostels, have been erected for the new higher educational institution in the area of Vishenka. The Vinnitsa Polytechnical Institute has 25 chairs.

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## IX. EDUCATION

28. USSR

YELYUTIN, V. P.

"Improving Educational and Scientific Research Work in Conservation and Rational Use of Natural Resources"

Moscow, Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 8, August 73, pp 3-4

Translation: (Order of the USSR Minister of Higher and Secondary Specialized Education, No 545, 19 June 1973). The CPSU in a proclamation of 29 December 1972, No. 898, entitled "On Reinforcing Conservation Efforts and Improving the Use of Natural Resources" pointed out that the conservation of nature and the rational utilization of natural resources, under the conditions of the scientific-technical revolution, are becoming one of the most important of state tasks.

Measures are being taken in our country for the protection of nature and the rational utilization of natural resources; land melioration is being widely developed; the fight for the control of erosion is being pushed; large hydropower plants have been built; the flow of rivers is being regulated and redistributed; measures are

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 8, Aug 73, pp 3-4

being taken to improve the fishing and hunting economy; forests are being restored over large areas; district heating and gas systems are being installed in cities and industrial centers (with substantial reduction in atmospheric contamination; and work is proceeding on the construction of installations for the purification of ground water and atmospheric industrial wastes.

The CPSU and the USSR Council of Ministers also pointed out that many ministries, departments, enterprises and organizations are not properly coping with problems in the protection of the environment from contamination and in assuring rational utilization of natural resources. Ministries, departments and scientific institutions are not giving enough attention to the preparation of technological processes which will exclude, or at least substantially reduce, the degree of contamination of the soil, atmosphere, and ground waters; they are not conducting the necessary research in the improvement of methods and a technology for the purification of ground water, the purification of gas, and other pressing problems in conservation and the restoration of natural wealth. Full and all-round utilization of mineral resources is not being practiced; large losses of commercial minerals are tolerated in the process of extraction and refining. Little attention is given to the production of modern types

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of equipment and apparatus for purification installations. There are instances of unreasonable utilization of reservoirs, and agricultural and forest lands.

Also noted were weaknesses in propagandizing conservation. Not enough attention is being given to this problem by schools, tekhnikums and higher educational institutions.

The CPSU and the USSR Council of Ministers have obligated the USSR Ministry of Education, the USSR Ministry of Higher and Secondary Specialized Education and the State Committee for Professional-Technical Education of the USSR Council of Ministers, as well as other ministries and departments of higher education, tekhnikums and professional-technical schools, to devote greater attention to propagandizing the principles of nature studies and the rational utilization and protection of the surrounding natural environment.

USSR Gosplan and the USSR Ministry of Higher and Secondary Specialized Education have been given the task of examining, in collaboration with the interested ministries and departments, the problem of intensifying the training of specialists in

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 8, Aug 73, pp 3-4

conservation and the utilization of natural resources, and arriving at a solution of that problem. The All-Union Central Council of Trade Unions and the Central Committee of the Leninist Young Communist League of the Soviet Union have been enjoined to assure that workers and young people take active part in the protection of nature.

In the past few years vuzes and tekhnikums around the country have been conducting work on the creation of a training system for specialists with higher and secondary specialized education, for instruction in the protection of the natural environment against harmful products of human activity. A course entitled "The Protection of Nature" is being given; and the same subject is being taught in various special courses as well as in courses of the social cycle. Questions of the preservation of nature are reflected in textbooks and theses prepared by students of secondary specialized educational institutions. Scientists of higher educational institutions have done a number of important studies on problems of the environment and rational utilization of natural resources. Mass-political work among students and young people has been extended.

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TOP SECRET SOURCE

USSR

YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 8, Aug 73, pp 3-4

The 29 December 1972 proclamation of the CPSU and the USSR Council of Ministers (No. 898), entitled "On Reinforcing Conservation Efforts and Improving the Use of Natural Resources", posed before the higher and middle special school new problems in the further training of personnel for a complete guarantee of specialists in the field of preserving and rationally exploiting natural sources, and in intensifying the scientific-research work being conducted on problems of the preservation and all-round utilization of natural riches by the vuzes of the country.

In this connection, as a supplement to instructions previously issued, I issue the following directive:

1. The ministries of higher and secondary specialized (popular) education of the union republics, the main boards of educational institutions and the administrations of ministries and departments controlling higher and middle education are directed as follows:

a) to conduct, in departmental higher and secondary specialized educational institutions, a verification of the execution of the order of the Ministry of the

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 8, Aug 73, pp 3-4

USSR Higher and Secondary Specialized Education of 19 March 1971, No. 230, and the letter of instruction of 24 January 1972, No. I-6. The results of the verification, together with measure for further improvement in the work of departmental educational institutions on problems of conservation shall be presented to the USSR Ministry of Higher and Secondary Specialized Education not later than 20 September 1973;

b) to guarantee the inclusion, within the program, of special subjects of secondary specialized educational institutions concerning the preservation of nature and the rational utilization of natural resources; also, the teaching of such subjects on a high scientific-methodological level;

c) to work out and implement measures for the development of scientific research and planning-design projects by the vuzes in the interest of the protection of the surrounding environment and the rational utilization of natural resources;

d) to obligate the rectors of higher and the directors of secondary specialized educational institutions as follows:

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PEPSICOVIET SOIENOK

USSR

YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 8, Aug 73, pp 3-4

to assure high quality in classroom exercises connected with problems in the protection of nature and the rational utilization of natural resources;

to take steps for further improvement in the study of problems in the preservation of nature and the better utilization of natural resources during the period of industrial operation;

to assure further extension in the thematios of classroom and course projects and operations;

to determine and implement measures for intensifying educational work among students of vuzes and students of tekhnikums, in connection with the preservation of nature and rational utilization of national resources;

to include questions of the preservation of nature and better utilization of natural resources in examination books, for the corresponding special-  
tions, in connection with semester and state examinations;

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshogo i Srednego Spetsial'nogo Obrazovaniya SSSR, No 8, Aug 73, pp 3-4

not to permit any distribution of specialists who have completed higher and secondary specialized institutions in courses in nature preservation, in work unconnected with their specialties;

to enlist workers of vuzes and tekhnikums in regular illumination of the instruction process (or scientific research in the case of vuzes) connected with questions of the preservation of nature and the rational utilization of natural resources, using bulletin board or multi-copy newspapers ("Herald of the Higher School" and "Secondary Specialized Education");

to take measures for the extension of propaganda efforts in connection with the preservation of nature and better utilization of natural resources among the population and the personnel of industrial and agricultural enterprises; and

to make due allowance in educational plans for the reading of lectures and the holding of theoretical conferences on natural themes; also for

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the formation of seasonal exhibitions and displays, the demonstration of scientific-popularization films, the holding of "wood days" and various other steps aimed at inspiring a love for nature and a striving to reproduce its riches;

e) to extend to the rectors of departmental vuzes a guarantee of timely and quality execution of scientific research works in the area of the preservation of nature and the rational utilization of natural resources; and

2. The Planning-Finance Administration (Comrade Chuprunov), together with the Instruction and Methods Administration for Higher Education (Comrade Bogomolov) and the Instruction and Methods Administration for Secondary Specialized Education (Comrade Kuz'min) shall generalize the proposals of the ministries and departments concerning the training of specialists in the preservation of nature and the utilization of natural resources, as well as the preparation of appropriate suggestions for discussion by the staff.

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29. USSR

"The Unity of Education and Science"

Moscow, Izvestiya, 13 Feb 74, p 1

Abstract: The 24th Party Congress has stressed the need for the increase in the effectiveness of scientific activity, the acceleration of practical realization of its achievements, and the improvement of cooperation between science and production.

Modern science has a powerful technical base in industry. In turn, there is no branch of production in which the advanced science is not playing a leading role. The rapid progress in both science and technology requires specialists capable of grasping it and then carrying it creatively and actively forward. Thus, science, education, and production form a system whose actions are interdependent and inter-linked. The scientific activity of higher educational institutions should therefore ensure, in the first place, the high-quality training of specialists.

The editorial quotes the words of L. I. Brezhnev from a speech delivered at the All-Union Rally of Students: "It is important and absolutely indispensable to master deeply and thoroughly the program material of a higher educational institution. But this alone is insufficient. One must learn to constantly improve one's knowledge, acquire habits of a researcher, and a wide theoretical horizon. Without that it is difficult to find one's bearings in the ever increasing volume of knowledge and in a growing flow of scientific information."

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Izvestiya, 13 Feb 74, p 1

The editorial emphasizes the importance of the inclusion, in the educational process, of the participation of students in elaborations by scientific departments and laboratories of problems relative to economic agreements and of the work of students in design, planning, economic and other bureaus. Graduates of every scientific institute should be given initial experience in research work. One should remember that the volume of this work performed by higher educational institutions and relative to current production problems steadily grows: in the years of the present Five-Year Plan it has reached the value of three billion rubles. Direct links between higher educational institutions and production are getting closer and stronger. Several examples are quoted of successful cooperation between higher scientific and research institutions and production.

In conclusion, the editorial reminds scientists of the Appeal of the Executive Committee CPSU to the Party and Soviet People expressing confidence that "the Soviet intellectuals will with over greater energy and persistence develop science, technology, and culture, and will strive to increase the effectiveness of scientific research and to ensure the most rapid introduction of scientific and technical achievements into the national economy."

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30. USSR

YELYUTIN, V. P.

"A Survey of 1972"

Moscow, Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 13-16, 18 & 19

Translation: On Results of Scientific Research Work in Higher Educational Institutions in the Systems of the Ministry in 1972

Order of the Minister of Higher and Secondary Specialized Education USSR, No 648 of 6 August 1973

The collectives of higher educational institutions, implementing decisions of the 24th CPSU Congress and the concrete plan of the realization of these decisions, outlined in the decree of the Central Committee CPSU and the Council of Ministers USSR of 18 July 1972 "On Measures for Further Improvement of Higher Education in the Country," are carrying out a wide range of measures, aimed at further enhancement of theoretical level and effectiveness of scientific research, in close connection with tasks of the improvement of quality of the training of specialists, the strengthening of cooperation with higher educational institutions and institutes of the USSR Academy 1/19

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of Sciences, branch ministries and departments, the acceleration of introduction of the results of scientific research into the realm of material production and educational process, and the creation of conditions for a wider involvement of students in scientific research work.

In 1972 the higher educational institutions carried out important research work in the domain of mathematics, mechanics, physics, chemistry, biology, geology, economics, exploitation of natural resources environmental protection, electronics, machinebuilding, agriculture, etc.

Considerable successes were achieved in 1972 by the chairs of social sciences. Their investigations were directed toward elaboration of topical problems resulting from decisions of the 24th Congress CPSU and the decree of the Executive Committee CPSU of 1967 "On Measures for Further Development of Social Sciences and the Increase of Their Role in Communist Construction."

In the center of attention of scientists of the higher school and especially of those teaching social sciences and humanities were problems connected with  
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realization of the decision of the Executive Committee CPSU "On the Preparation for the 50th Anniversary of the Founding of the Union of Soviet Socialist Republics."

In the period under review the investigations on topical problems of the higher school continued to develop.

Conclusive proof of an important contribution of the higher school to scientific-technical progress is the award in 1972 of Lenin Prizes to 10 scientists of higher educational institutions, of State Prizes USSR to 36 scientists, and Lenin Young Communist League Prizes to 12 young scientists in science and technology.

A number of scientists of the higher school were conferred medals and prizes of the USSR Academy of Sciences and of Councils of Ministers and Academies of Sciences of Union Republics.

Year 1972 was notable by a further growth of indices showing the level of development of the higher science.

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The sum total of scientific research work in higher educational institutions in the system of the Ministry of Higher and Secondary Specialized Education USSR amounted in 1972 to 661,500,000 rubles, which was 100 million rubles more than in 1971.

As recorded by the TsSU SSSR (Central Statistical Administration USSR) 50,500 themes were under elaboration in 1972 in accordance with research plans of higher educational institutions.

The number of works carried out in accordance with decisions of the Government of the USSR and Union Republics and in conformity with coordination plans for the solution of basic scientific and technological problems and plans of the USSR Academy of Sciences has increased. Their importance in the total number of scientific research works of higher educational institutions has also increased.

Including assignments completed ahead of time and in excess of the plan, the sum total of the completed themes amounted to 101% in relation to the number of the jobs planned to be terminated.

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshogo i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 13-16, 18 & 19

In the past year the higher educational institutions in the system of the Ministry of Higher and Secondary Specialized Education USSR graduated about 800 doctors and over 8,000 candidates of sciences.

In 1972 the work was completed of putting in order the network of scientific establishments of higher educational institutions in the system of the Ministry of Higher and Secondary Specialized Education.

By 1 January 1973 the system of the Ministry of Higher and Secondary Specialized Education USSR numbered 55 scientific research institutes, 4 design bureaus, 406 special and 569 branch laboratories, 17 computer centers, 10 astronomical laboratories, 13 botanical gardens, and 296 scientific research councils.

In 1972 the activity of the Northern Caucasian Scientific Center of the Higher School was further expanded.

A considerable effort was made for the increase and improvement of the pool of electronic computers and their utilization in educational and scientific work of

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higher educational institutions. By the end of 1972 the higher educational institutions in the system of the Ministry of Higher and Secondary Specialized Education USSR numbered 1348 electronic digital computers. In 1972 alone the higher educational institutions received 316 electronic digital computers and about 50 automatic computers.

Connections of higher educational institutions with production and scientific research institutions of the Academies of Sciences of the USSR and Union Republics and branch Ministries and departments were considerably strengthened. The complex scientific-cum-production units were created in a number of higher educational institutions.

One began to pay more attention to problems of the introduction of the results of scientific research into production. The economic effect achieved as a result of the introduction of completed elaborations of the higher educational institution has increased. In 1972 alone the economic effect confirmed by the industry exceeded 1,2 billion rubles. For the results of completed scientific research work in 1972 the higher educational institutions have received over 6,200 author's certificates and 176 patents.

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The system of economic agreements was further expanded, which makes it possible, with its correct use, to step up the contribution of the higher school to the scientific and technological progress, to improve technological base of higher educational institutions, and to enhance the quality of the training of specialists. In the year under review the volume of economic agreements constituted 536 million rubles, that is 81% of the total volume. It increased by 85 million as compared with 1971. The mean value of an individual economic agreement has also increased, as well as the scientific importance of these works. In 1972 in the higher educational institutions of the system of the Ministry of Higher and Secondary Specialized Education USSR there were published about 2,600 monographs and almost 3000 collections of scientific papers; 105,000 articles were published in various scientific journals. The total amount of publications of higher educational institutions amounted in 1972 to almost 155,000 author's sheets against 124,000 sheets in 1971.

A considerable effort was displayed by the Ministries of Higher and Secondary Specialized Education RSFSR, Ukrainian SSR, Belorussian SSR, and Azerbaijdzhan SSR in the domain of the increase of the number of the interuniversity scientific subject-matter collections which are much in demand in scientific circles.

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The students scientific research work has greatly gained in scope. In 1972, 650,000 day-division students participated in all forms of scientific creativeness in higher educational institutions of the system of the Ministry of Higher and Secondary Specialized Education USSR. In the All-Union Competition for the best student scientific work in the domain of natural, technical, and classical sciences for 1971/1972 students from 596 higher educational institutions of the country participated.

A great interest among students was aroused by the Fourth All-Union Competition of Students' Works relative to the problems of social sciences, the history of the All-Union Lenin Young Communist League, and the International Youth Movement. For the first time medals of the USSR Academy of Sciences were awarded for the five best student scientific works.

The elaboration of programs of the development of scientific research in higher educational institutions is expanded up to the year 2000.

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 13-16, 18 & 19

The level of supervision of scientific research in higher educational institutions on the part of the Ministries of Higher and Secondary Specialized Education of Union Republics and the Main Administration of Higher Educational Institutions of the Union Ministry has improved.

The Sections of the Scientific-Technical Council of the Ministry of Higher Education USSR and Scientific-Technical [Scientific-Methodical] Councils of the Ministries of Higher Education of Union Republics worked successfully in 1972.

The Scientific-Technical Councils, with help of Sections, prepared jointly with Branch Ministries a series of orders aimed at bringing about wider cooperation of scientists from higher educational institutions in the solution of problems of the corresponding branches.

At the same time the work on organization of the scientific research activity of higher educational institutions exhibited essential shortcomings.

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 13-16, 18 & 19

In many higher educational institutions the control over realization of scientific research work is exercised inadequately.

There are serious shortcomings in the organization of research connected with economic agreements and in spending funds obtained by higher educational institutions in accordance with these agreements. In a number of cases the growth of the volume of research required by economic agreements results not from the selection of most important works of topical interest but owing to the increase in the number of smallish subjects of minor scientific importance which often are unconnected with line in which specialists were trained.

The accumulation of nonbudgetary funds resulting from the excess of receipts over expenditures is utilized unsatisfactorily, especially in higher educational institutions under the jurisdiction of the Ministries of Higher and Secondary Specialized Education Azerbaydzhan, Armenian, and Latvian SSR.

In some republics is noted the process of systematic decrease of the relative level of financing from the State budget of the scientific research work of higher

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educational institutions [Ministry of Education Ukrainian SSR, Ministry of National Education Moldavian SSR, and others].

There are shortcomings in the work of scientific units of higher educational institutions. Some scientific units are still rather weakly connected with educational process. The professorial and teaching staff, postgraduates, and students are made to participate little in the work of these units.

Not all instructors of higher educational institutions are taking part in scientific research work relative to subject-matter plans of higher educational institutions. On the whole, in the entire system, only 64% of professorial and teaching staff participated in the fulfillment of the subject-matter plans of scientific research work. Considerable number of instructors is engaged in elaboration of minor, secondary problems.

As before, investigations in the domain of natural and technical sciences in higher educational institutions subordinated to Ministries of National Education Tadzhik, Turkmen, and Kirgiz SSR have been insufficiently developed.

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 13-16, 18 & 19

The work in providing higher educational institutions with modern computing equipment and its use needs to be improved.

The accrued operating time of electronic digital computers per student in higher educational institutions under the jurisdiction of the Ministries of Higher and Secondary Specialized [National] Education Armenian, Georgian, Moldavian, and Kirgiz SSR has decreased.

There are definite shortcomings in the organization of the work relative to the introduction of the results of scientific research into production.

In the case of higher educational institutions under the jurisdiction of the Ministries of Higher and Secondary Specialized [National] Education Belorussian, Armenian, Georgian, and Tadzhik SSR there is still lack of satisfactory confirmation by the industry of the economic effect from the introduction of the completed works, whereas the higher educational institutions of the Ministry of National Education Turkmen SSR have not received during the recent years any confirmation from the national economy relative to the economic effect obtained from the introduction of the results of their work.

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 13-16, 18 & 19

There are also shortcomings in the publishing activity of higher educational institutions. Some higher educational institutions are issuing collections of scientific works which include articles or communications dealing simultaneously with many branches of sciences, which lowers their scientific and practical value.

The new and effective forms of drawing students into scientific research work are not sufficiently actively generalized and propagated. Scientific research work is being weakly introduced into educational process.

With the aim of successful realization of tasks set before higher schools in the decisions of the 24th Congress of the CPSU and decrees of the Executive Committee CPSU and the USSR Council of Ministers dated 18 July 1972 on increasing the theoretical level and effectiveness of scientific research work in higher educational institutions, I am ordering:

1. The Ministries of Higher and Secondary Specialized [National] Education of Union Republics and the Main Administration of Higher Educational Institutions of the Ministry of Higher Education USSR:

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 13-16, 18 & 19

to exert more active influence on the subject matter of scientific research in higher educational institutions under their jurisdiction, in an effort to increase the scientific level and the topicalness of research being conducted and to concentrate material and financial resources in the most important directions of fundamental and applied sciences, whose immediate development was outlined in the directives of the 24th CPSU Congress;

to develop wider cooperation of higher educational institutions with corresponding institutes of the Academies of Sciences USSR and Union Republics, branch ministries and departments, with the aim of unifying creative forces of higher educational and scientific institutions, timely exchange of scientific information, collective utilization of scientific equipment, and wider inclusion of higher educational subject matter in the plans for the development of national economy of the USSR and Union Republics, in the coordination plans of the Academy of Sciences USSR and Academies of Sciences of Union Republics, and in the plans for the solution of complex scientific-technical problems;

to strengthen control over the state and content of research matter resulting from economic agreements, and over expenditure of funds according to higher educational 14/19

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institutions from the excess of receipts over expenditures, and not to allow the conclusion of economic agreements for execution of works which have no serious scientific-technical importance, do not relate to basic scientific trends of higher educational institutions, and do not require participation of highly qualified scientific and educational cadres as responsible executives.

To systematically control the carrying out by subordinated higher educational institutions of recommendations resulting from the Order of the Minister of Higher and Secondary Specialized Education USSR dated 20 October 1970, No 720:

with the aim of further expansion of fundamental scientific research work to strive more energetically for the development in higher educational institutions of creative research based on the budgetary financing;

to intensify control and increase exactingness in the fulfillment of the plans of scientific research, and to resort on a wider scale to the aid of scientific community in carrying out acceptance inspection of works accomplished from the state budget;

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to intensify supervision of the activity of scientific institutions, striving to achieve that their scientific trends correspond to the type of work for which their specialists have been trained; to make wider use of scientific establishments of higher educational institutions for the uplift of the theoretical level of teaching, training, and improvement of qualifications of scientific and educational cadres;

to motivate work for the improvement of the effectiveness of scientific research and the introduction of the results obtained into production;

to this end, to strive to establish long-term, firm, creative connections with enterprises and institutions of branch ministries.

to practice on a wider scale the conclusion of long-term comprehensive agreements of scientific-technical cooperation of higher educational institutions with industrial enterprises and organizations;

to take measures for the improvement of the system of scientific and technical information in higher educational institutions, and fuller and operative acquaintance

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of professorial and teaching staff, postgraduates, and students with the latest achievements in science and technology;

to pay more attention to the publishing activity of higher educational institutions, and to perform systematic control of the ideological and scientific level of materials published; to take measures for as rapid as possible transition to the publication of interuniversity subject-matter collections of scientific works;

with the aim of a wider introduction of computers in scientific research carried out by higher educational institutions, and in educational process, to organize the education of professorial and teaching staff of higher educational institutions in the use of computer techniques in their work;

to continue work for the creation in higher educational institutions of favorable conditions for a wide-scale participation of students in scientific research work; to activate work of university and republic councils on students' scientific research work; to more widely introduce scientific work into educational process, using the experience of higher educational institutions that lead in this domain;

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 13-16, 18 & 19

to make wider use of the assistance of scientific technical (scientific methodical) and other councils in the work on coordination and improvement of the effectiveness of scientific research work.

3. [no number 2 in original] The Scientific-Technical Council (Comrade Krutov):

to prepare and to send within two months to the Ministries of Higher and Secondary Specialized [National] Education of Union Republics the summary materials on the results of research work of higher educational institutions for 1972 and a list of questions that must be taken into account in the organization of verification of economic agreements in higher educational institutions;

to make it incumbent upon Sections of the Scientific-Technical Council to make wider use of receiving reports on the most important completed research work of higher educational institutions from the state budget funds;

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 13-16, 18 & 19

to constantly control scientific level of materials published in the respective serials of the journals "Nauchnyye Doklady Vysshey Shkoly" [Scientific Reports of the Higher School] and "Izvestiya Vysshikh Uchobnykh Zav'deniy" [News of Higher Educational Institutions];

to intensify work of the control of the organization of work connected with economic agreements in higher educational institutions.

4. The Scientific-Technical Council (Comrade Krutov), the Planning and Financial Administration (Comrade Chuprunov), and M/SN Administration of Higher Educational Institutions (Comrade Ryzhonkov), to submit by 1 October 1973 the proposals as to the organization of a service of the Ministry for the introduction into the national economy of the results of scientific research of higher educational institutions.

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31. USSR

YELYUTIN, V. P.

"Order of the Minister of Higher and Secondary Specialized Education USSR"

Moscow, Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya, No 2, Feb 74, pp 1-2

Translation: On the Transfer of the Affiliate of the All-Union Correspondence Machine-Building Institute in Elektrostal' to the Moscow Institute of Steel and Alloys

Order of the Minister of Higher and Secondary Specialized Education of the USSR, No 915 of 6 December 1973

In connection with the transfer of the affiliate of the All-Union Correspondence Machine-Building Institute in Elektrostal' of the Ministry of Higher and Secondary Specialized Education RSFSR to the Moscow Institute of Steel and Alloys of the Ministry of Higher and Secondary Specialized Education USSR, I am ordering:

1. The Ministry of Higher and Secondary Specialized Education RSFSR (Comrad Obratzsov I. F.) is to transfer the affiliate of the All-Union Correspondence Machine-Building Institute in Elektrostal' to the Moscow Institute of Steel and Alloys.

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YELYUTIN, V. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya, No 2, Feb 74, pp 1-2

2. The Main Administration of Higher Educational Institutions (Comrade Ryzhonkov D. I.) and the Planning and Finance Administration (Comrade Chuprunov D. I.) are to appoint a commission for taking over business matters and assets of the affiliate of the All-Union Correspondence Machine-Building Institute in Elektrostal' as of 1 January 1974.

3. Deed of takeover-transfer of business matters and assets is to be made over to the Ministry of Higher and Secondary Specialized Education USSR by 20 January 1974.

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32. USSR

"Physicians to Be Trained in Medical Technology"

Moscow, Pravda, 12 Mar 74, p 3

Translation: An answer was received from USSR Deputy Minister of Health P. Gerasimov, to the article "The Engineering Profile of Hippocrates" (Pravda, 20 Oct 73).

The Ministry considers basically correct the way the question is formulated concerning the improvement of the training of medical students in medical technology and provision of therapeutic-prophylactic institutions with equipment and personnel for its operation.

In the new curriculum of physics the study was introduced of the principles of the mechanism and operation of various medical apparatuses and of physical principles of the methods of therapy. It was decided that in 1975 a new textbook of physics for medical students will be issued. Questions of the operation of medical equipment are being included in the curricula and plans of work of internship.

The Ministry is working out measures relative to the training of specialists in the operation of medical apparatuses and equipment. The Second Moscow Medical Institute began to train physicians in medical cybernetics. It is planned to organize the

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Pravda, 12 Mar 74, p 3

training of medical engineers for the operation and repair of medical equipment for the therapeutic-prophylactic institutions. In the near future it is contemplated to create a department of medical technology at the Central Institute for the Advanced Training of Physicians.

Recently the material and technical base of the Repair Service of the "Soyuzmedtekhnika" Association [All-Union Association for Supplying Medical Equipment] was considerably improved and expanded, some of repair enterprises was reconstructed, and the creation of the new ones is in progress. A Metrological Service has been organized at the Ministry. The training of specialists in medical electronics has been started at three institutes in Leningrad and Tomsk.

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33. USSR

SHAPOSHNIKOVA, A. P., deputy minister

"Orders To Discontinue or Establish Aspirant Programs in Various Institutes"

Moscow, Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No. 11, Nov 73, pp 18-19

Translation: On Discontinuing the Aspirant Program in Scientific Research Institutes of the Ministry of Health Georgian SSR.

Order of the Ministry of Higher and Secondary Specialized Education USSR, No. 668 of 13 August 1973.

With the aim to further regulate the training of scientific cadres through the aspirant program, and upon coordination with the Ministry of Health USSR and the Ministry of Health Georgian SSR, the training of aspirants is to be discontinued in the following scientific research institutes:

1. Scientific Research Institute of Health Resort Science
2. Scientific Research Institute of Pediatrics

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SHAPOSHNIKOVA, A. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 18-19

3. Scientific Research Institute of Hematology and Blood Transfusion
4. Scientific Research Institute of the Generative Function of Man
5. Scientific Research Institute of Psychiatry
6. Scientific Research Institute of Experimental and Clinical Therapy
7. Scientific Research Institute of Clinical and Experimental Oncology
8. Republic Scientific Research Institute of Obstetrics and Gynecology
9. Scientific Research Institute of Experimental and Clinical Surgery
10. Scientific Research Institute of Clinical and Experimental Neurology
11. Scientific Research Institute of Clinical and Experimental Cardiology
12. Scientific Research Institute of Medical Parasitology

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SHAPOSHNIKOVA, A. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 18-19

On Discontinuing the Aspirant Program in the All-Union Scientific Research Institute of Railroad Hygiene of the Ministry of Communications USSR.

Order of the Ministry of Higher and Secondary Specialized Education USSR, No. 671 of 13 August 1973.

With the aim to further regulate the training of scientific cadres through the aspirant program, and upon coordination with the Ministry of Communications USSR, the training in the All-Union Scientific Research Institute of Railroad Hygiene is to be discontinued.

On the Organization of the Aspirant Program in the Kazakh Scientific Research Hydrometeorological Institute.

Order of the Ministry of Higher and Secondary Specialized Education USSR, No 675 of 15 August 1973.

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SHAPOSHNIKOVA, A. P., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 18-19

The aspirant program for training scientific cadres in the specialties of land hydrology, meteorology, climatology, and agrometeorology is to be organized in the Kazakh Scientific Research Hydrometeorological Institute.

On the Organization of the Aspirant Program in the All Union Scientific Research Institute of Well Casing and Drilling Fluids of the Ministry of Petroleum Industry USSR.

Order of the Ministry of Higher and Secondary Specialized Education USSR, No. 676 of 15 August 1973.

The aspirant program for training scientific cadres in the specialty of the development and exploitation of petroleum, gas, and gas condensate fields is to be organized at the Scientific Research Institute of Well Casing and Drilling Fluids of the Ministry of Petroleum Industry of the USSR.

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ЧУАПОШНИКОВА, А. П., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 18-19

On the Organization of the Aspirant Program in the Mironovka Scientific Research Institute of Selection and Wheat Seed Production (Kiyovskaya Oblast) of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin.

Order of the Ministry of Higher and Secondary Specialized Education USSR, No. 677 of 15 August 1973.

The aspirant program for training scientific cadres in the specialties of selection and wheat seed production and general agriculture is to be organized at the Mironovka Scientific Research Institute of Selection and Wheat Seed Production (Kiyovskaya Oblast) of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin.

On the Organization of the Aspirant Program in the Belgorod Technological Institute of Building Materials of the Ministry of Higher Educational Institutions USSR.

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ЧУАПОШНИКОВА, А. П., Byulleten' Ministerstva Vysshego i Srednego Spetsial'nogo Obrazovaniya SSSR, No 11, Nov 73, pp 18-19

Order of the Ministry of Higher and Secondary Specialized Education USSR, No. 679 of 15 August 1973.

The aspirant program for training scientific educational cadres in the specialty of the technology of silicate and refractory nonmetallic materials is to be organized at the Belgorod Technological Institute of Building Materials of the Ministry of Higher Educational Institutions USSR.

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PPD:SOVIET SCIENCE

XX. MISCELLANEOUS

34. USSR

PETROV, G., correspondent of "Pravda"

"A Guide to 'Novosibirsk Scientific Center'"

Moscow, Pravda, 24 Feb 74, p 3

Translation: "The Siberian Department of the Academy of Sciences USSR expresses its great satisfaction on account of the publication of a Tourist Guidebook to the 'Novosibirsk Scientific Center' ... This is a real present to the scientists of the Siberian Department and their guests on the occasion of the 250th anniversary of the Academy of Sciences."

This is how Academician G. I. Marchuk has appreciated the publication prepared by the collective of Plant No. 3 of the Main Administration of Geodesy and Cartography of the Council of Ministers USSR. Academy City is visited every year by about five thousand scientists and specialists, participants of scientific conferences, by over two thousand foreign guests, and by many Soviet tourists. This guidebook was published to help them.

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35. USSR

MOKEYEV, Yu., correspondent of "Pravda"

"The 'Rivers' in the Atmosphere"

Moscow, Pravda, 16 Feb 74, p 6

Translation: Vladivostok, 15 Feb 74. An atlas-handbook of stream currents in the atmosphere, a sort of peculiar atmospheric rivers, was compiled at the Far Eastern Scientific Research Hydrometeorological Institute.

The work contains the characteristics and maps of these currents over the territory of the Far East. The stream currents are being carefully studied by aerologists since many of them, having a speed of 70 and more meters per second, present a danger to aircraft and create disturbances in flight. The atmosphere over the Primor'ye territory is especially rich in "atmospheric rivers." The atlas-handbook will be indispensable in planning new airline routes.

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36. USSR

REKUN, R.

"International Show of Scientific Research Equipment"

Moscow, Izvestiya, 13 Mar 74, p 4

Translation: The exhibition "Nauchpribor-74" was opened here (Riga) of foreign specialized scientific research equipment.

Participating in this exhibition are 108 firms from 13 countries, viz.: Austria, Great Britain, German Democratic Republic, Denmark, Italy, Netherlands, U.S.A., France, German Federal Republic, Czechoslovakia, Switzerland, Sweden, and Japan. On display are instruments for spectroscopic, physicochemical, medical-biological, radiotechnical, and physiomechanical investigations, as well as computer techniques and equipment for processing results of scientific investigations. Machines make drawings of molecules, determine by means of a laser beam structures of chemical compounds and the structure and composition of substances, and make it possible to penetrate into a realm where the scale of measurements is one ten-millionth fraction of a millimeter.

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30 Apr 74

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YPD:SOVIET SCIENCE

XX. DESIGN BUREAUS, MINISTRIES, NUMBERED NII'S

1. USSR

"Experimental Design Bureau of the Cable Industry"

Moscow, Vechernaya Moskva, 5 Feb 74, p 2

Translation: Workers of the Experimental Design Bureau of the Cable Industry in Mytishchi are manufacturing unusual articles on the instructions of the Institute of Clinical and Experimental Surgery of the Ministry of Health. These are parts of the "artificial heart," such as valves, atria, ventriculi, and tubes to serve as blood vessels. They are manufactured from organosilicon rubber.

Recently workers of the Experimental Design Bureau created the "assistor," designed for a prolonged mechanical massage of the heart in case of its arrest. The model has been already tested on animals. Now it is to be improved; the assistor must be made to work continuously for two weeks.

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2. USSR

QUSEV, O., correspondent of "Pravda"

"Sevastopol' Design Bureau of the 'Azcherryba' Administration"

Moscow, Pravda, 16 Feb 74, p 6

Translation: Kiev, 15 Feb 74. Workers of the Sevastopol' Design Bureau of the "Azcherryba" [Azov-Black Sea Fisheries] Administration have developed a device capable of repairing up to 600 running meters of fishing nets within an hour.

The tests of this device have shown that besides a considerable acceleration of repair work it is highly profitable. A thermoplastic container which also was developed at Sevastopol' is likewise destined for those who work on the seas. It differs from ordinary ones by its great durability, lightness, and high resistance to the action of sea water.

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